CEC No. 02-AFC-02

SALTON SEA GEOTHERMAL UNIT 6 POWER PLANT PROJECT

RESPONSES TO:

CALIFORNIA UNIONS FOR RELIABLE ENERGY DATA REQUESTS, SET TWO (NOS. 99 - 236)

Application for Certification (02-AFC-02) for Salton Sea Geothermal Unit 6 Power Plant Project

Submitted by:
CE OBSIDIAN ENERGY LLC

Submitted to:
California Energy Commission
1516 Ninth Street, MS-4
Sacramento, California 95814-5512

File date:
January 3, 2003

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GENERAL OBJECTIONS AND QUALIFICATIONS

1. The following responses to data requests are made solely for the purpose of the application before the California Energy Commission.

2. Each response is subject to all appropriate objections, including, without limitation, objections concerning relevancy and materiality. All such objections and grounds for objection involving or relating to the matters raised herein are reserved and may be introduced at the time of hearing.

3. Applicant objects to each and every data request to the extent that it calls for the disclosure of information protected by the attorney client privilege, attorney work product doctrine, or other applicable privilege. To the extent that an individual data request may be construed as seeking such privileged information, Applicant claims such privilege and invokes such protection.

4. Applicant qualifies the responses to data requests by noting that it has not completed its investigation. To the extent that Applicant's future investigation may disclose the existence of additional responsive information, Applicant's responses are made without prejudice to its rights to utilize, produce or introduce at hearing information or documentation which is inadvertently omitted, not yet known, or not yet ascertained, discovered, identified or located by Applicant in responding to the data requests. Without obligation, Applicant hereby reserves the right to supplement, amend or modify the data request responses contained herein.

5. Applicant objects to each and every data request to the extent that it calls for information that is not reasonably relevant to the proceeding or decision. Furthermore, Applicant

objects to each and every data request to the extent it calls for information that is readily available and can otherwise be obtained.

6. The foregoing objections and qualifications apply to each and every data request herein, and are incorporated by reference to the extent applicable in each of the specific responses set forth below as though fully set forth therein. The failure to mention one of the foregoing objections in any of the specific responses set forth below shall not be deemed a waiver of such objection.

Water Resources

99. Please provide a topographic map that shows all existing embankments, their height, and annotates their condition.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Existing topographic maps of the project site and linear facilities are presented in Figures 3.3-12 and 5.4-1A through 5.4-1EE of the Application for Certification (AFC). No additional topographic maps have been developed at this time. However, after receipt of a license from the CEC and prior to construction, the Applicant expects that detailed surveys will be conducted to support the final design of the Salton Sea Unit 6 (SSU6).

100. Were any of the existing embankments constructed using filter cake? If yes, please identify these areas on the map provided in Data Request #99. Please estimate the reduction in 100-year flood plain volume due to the Project. Please support your answer with hydraulic calculations, model input and output files, and all other information you relied on.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The Applicant is unaware of the design and construction details of the existing embankments.

As stated in the AFC, the Salton Sea Known Geothermal Resource Area (KGRA) includes 161 square miles or 102,887 acres (AFC, Section 3.2.1, page 3-2). The removal of 80 acres will have an insignificant effect on the flood plain volume of the area.

101. Is the applicant willing to provide flood plain storage equivalent to the volume removed by the Project? If no, please explain why not and support your answer.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

No. There is no evidence that a reduction in the flood plain volume by 80 acres will result in significant effects; therefore, no mitigation is required.

102. Please provide detailed chemical composition data for each stream that would be routed to the brine pond, including the reverse osmosis reject and liquids from the thickener, bermed areas around plant equipment, and emergency relief tanks for all constituents included in AFC Table 3.3-2.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Please refer to table 3.3-2 and 3.3-5 for brine pond and water compositions.

The RO reject composition is provided under CURE data request 157.

103 Based on operating experience at the existing Units 1-5, please estimate the frequency of discharge, the length of time wastes would remain in the ponds, and annual average amount of each of the following streams: reverse osmosis reject; liquids from the thickener, bermed areas around plant equipment, and emergency relief tanks; and startup and drilling brine.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The operating experience referred to in data request 103 is not relevant to the proposed SSU6 Project. The design of the redundant brine ponds for Unit 6 is different than at the existing facilities.

104. Please present a sample calculation that shows how the brine pond composition data in Table 3.3-2 was calculated. If not otherwise provided in response to Data Requests #102 and #103, please support your answer with volumes and chemical composition data for each waste stream.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The brine pond composition is derived from the brine composition assuming 26% flash (personal correspondence, Bibb, 2002).

105. Will any waste streams not otherwise identified in Data Requests #102 through #104 be discharged into the brine pond? If yes, please identify the stream(s), estimate their volume, and provide chemical composition data.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

No.

106. Please clarify which waste streams will be discharged to the brine ponds on a routine basis and which will be discharged only under emergency, upset, or intermittent conditions.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Discharges to the brine ponds are not considered to be waste streams; brine pond fluids are reused to replenish the geothermal resource.

All discharges to the brine pond will occur under emergency, upset or intermittent conditions, including the following:

Please refer to item 82 from Salton Sea Unit #6 Project (02-AFC-02) CEC Data Request Response Set 1 for a description of the upset conditions that would result in discharge into the brine ponds.

Please refer to item 84 from Salton Sea Unit #6 Project (02-AFC-02) CEC Data Request Response Set 1, which discusses the intermittent discharge from the RO system reject water into the brine ponds.

Production test units (PTU) will also discharge into the brine ponds. Please see response to CEC Data Request #98, for a discussion of PTU frequency of occurrence.

107. Please list the types of events that would result in discharges to the brine ponds.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Please see response to CURE Data Request #106.

108. The AFC indicates that the ponds will contain "aerated" brine. (AFC, p. 5.4-1.) Please explain what is meant by "aerated."

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

In this context, the term "aerated" brine indicates that the brine was exposed to air.

109. Please provide a plan, section and detail for the storm water and service water ponds. The plan should include the design basis for all liner systems.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The detailed pond design drawings requested in this data request have not been prepared at this time and are expected to be prepared during the final design of the project. The Applicant would expect to complete the project final design within 6 months of receipt of the CEC license.

110. Please explain how these ponds can be constructed without violating Imperial County land use codes, as noted in the AFC at page 5.3-18.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Construction of the storm water and service water ponds will be in accordance with Imperial County's grading and excavation ordinance procedures and the requirements of the construction permit. Pond construction will include procedures for drainage systems, protective devices and site dewatering. Pond construction drawings and specifications will not include any proposed grading, elevations, or earthwork that would cause adjacent land to be rendered unfit for agricultural use. The depths of any

excavation or earthwork will not disturb or damage drain tiling system in adjacent irrigated land. Pond construction below the immediate site area water table will consider recommendations made in the Salton Sea Unit 6 Geotechnical Investigation, report number 02-0022, prepared by Geotechnics Incorporated, dated February 5, 2002, and presented in Appendix J of the AFC. All construction documents will provide detailing for pond construction that incorporate Best Management Practices (BMP) and address erosion control measures and storm drainage requirements. A California registered Civil Engineer will prepare all construction drawings and specifications.

111. Please describe the operation and maintenance of the storm water and service water ponds.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The service water pond will be filled with IID canal water via a 500[NTS1]-foot-long buried 10-inch pipeline (AFC Section 3.3.4.2). Maintenance of the storm water and service water pond may include periodic removal of vegetation to the extent necessary to maintain pond integrity.

112. The service water pond would be designed to provide a 6-day supply buffer, amounting to 209,800 cubic feet or about 1.6 million gallons. (Response to CEC Data Adequacy Comments, p. WATER-19.) How frequently would IID water be routed to the service water pond? Please support your answer with an analysis of the reliability of the IID Colorado River supply and provide all information in support of your analysis.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The service water is expected to be filled on a continuous basis.

113. The Water Quality Control Plan for the Colorado River Basin encourages practices that conserve water. (Water Quality Control Plan, Colorado River Basin – Region 7, p. 1-4, 4-1.) Please explain why a surface pond is used in a desert environment to contain freshwater supply, rather than an enclosed 2 million gallon storage tank?

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The Applicant evaluated storing water in an above ground storage tank versus in a service water pond and determined the pond to be a better solution for this application based on flood management, maintenance, reliability and cost.

114. Please estimate the maximum daily and long-term annual average amount of water that would be lost to evaporation from the service water pond.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Service Water Pond Evaporation

	Monthly Eto (1) in/mo	Pan (2) in/mo	Pond (3) in/mo	Daily in/d		
Jan	2.48	4.13	2.89	0.093	Ap =	136,000 ft2
Feb	3.36	5.60	3.92	0.140	Ap =	3.12 ac
Mar	5.27	8.78	6.15	0.198	Evap =	6.29 ft/yr
Apr	6.90	11.50	8.05	0.268	**Q =**	**19.64 ac-ft/yr**
May	8.68	12.40	8.68	0.280		
Jun	9.60	13.71	9.60	0.320	**Qmax =**	**0.083 ac-ft/d**
Jul	9.61	13.73	9.61	0.310		
Aug	8.68	12.40	8.68	0.280		
Sep	6.90	9.86	6.90	0.230		
Oct	4.96	7.09	4.96	0.160		
Nov	3.00	5.00	3.50	0.117		
Dec	2.17	3.62	2.53	0.082		
Annual	71.61	107.82	75.47			

Notes:
(1) Zone 18, California Department of Water Resources (CIMIS Data).
(2) Conversion from Eto to pan evaporation; Eto/0.7 (winter), Eto/0.6 (summer)
(3) Conversion from pan to pond evaporation; 0.7*Pan [Brown & Caldwell]

115. Would the applicant be willing to replace the service water pond with an enclosed storage tank? If no, please explain why not and support your answer.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

No. Please see response to CURE Data Request #113.

116. Will any streams other than canal water be routed to the service water pond? If yes, which streams and under what conditions would they be routed to this pond?

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Please refer to page WATER-19 of the Applicant's response to CEC Data Adequacy comments.

117. Will any waters other than storm water runoff be routed to the detention pond? If yes, which waters and under what conditions would they be routed to this pond?

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

No.

118. The Geotechnical Report indicates that dewatering will likely be required during construction of the detention basin (and the service water pond, which was shown as a single basin on the site plan evaluated in the Geotechnical Report). (AFC, Appendix J., p. 13.) Will dewatering of these two basins be required during construction?

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

As stated in the Salton Sea Unit 6 Geotechnical Investigation, report number 02-0022, prepared by Geotechnics Incorporated, dated February 5, 2002, section 8.3.7, "any excavations on the site of more than a few hours will likely encounter groundwater seepage, and will need to be dewatered." Refer to this section of the Report for additional discussion of dewatering.

119. If the answer to Data Request #118 is yes, please estimate the amount of water that will be removed, its chemical composition, and the proposed disposal methods.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Refer to CEC Data Response 73. A chemical analysis of the water that may be present prior to dewatering is not available at this stage of Project development.

120. The Geotechnical Report indicates that permanent dewatering of the detention and service water basins may be necessary, or alternatively, that these basins would have

to be designed to resist the uplift pressure exerted by groundwater seepage, including the use of anchor piles. (AFC, Appendix J, p. 13.)

(a) Will the detention pond and the service water pond require permanent dewatering?

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

No, the Applicant does not expect that permanent dewatering will be required. Suitable means will be employed to design the detention and service water basins to withstand buoyancy forces on these ponds.

(b) If the answer to subpart (a) is yes, please estimate the amount of water that will be removed, its chemical composition, and the proposed disposal methods.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Please see response to CURE Data Request #120(a).

(c) If the answer to subpart (a) is no, please explain the design features that will be included in these basins to resist uplift pressure exerted by groundwater seepage.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Although the Geotechnical Report indicates that anchor piles may be employed, the preferred method is to counteract buoyancy is by applying weights externally to the pond, or by the application of a concrete liner heavy enough to withstand the buoyancy forces.

121. Solids would accumulate in the brine ponds. Please provide the following information on these solids:

(a) How frequently would solids be removed?

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Please see response to CURE Data Request #214(e).

(b) Please provide chemical composition data for the solids.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Please refer to Attachment CDR-121 for an MSDS sheet of the scale.

(c) Please estimate the volume and mass of solids that would accumulate in the ponds.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Please refer to table 5.13-3 of the AFC.

(d) Please describe the procedures that will be used to remove and dispose of brine pond solids.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Please refer to 3.3.4.4.2 of the AFC.

(e) Are the procedures described in subpart (d) the same as currently used at existing Salton Sea units? If no, please explain why different procedures are proposed for SSU6.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Yes, the proposed procedures are consistent with the Applicant's experience.

122. Please provide a copy of the permit application for each injection well that the applicant will submit to DOGGR and EPA.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

No applications have been filed yet. Permit application forms are publicly available.

123. Please provide a map that shows the boundaries of the shallow aquifer that underlies the site and identify the portion of the aquifer that is designated for municipal purposes.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Little data exists regarding the aquifer underlying the project site. The most comprehensive information appears to be contained in a groundwater study conducted by the County of Imperial (Groundwater Study, June 1996). This report is publicly available.

124. Please provide water quality data that is representative of shallow groundwater beneath the site.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Limited water quality data exists regarding the shallow aquifer. The Final Salton Sea Anomaly Master Environmental Impact Report prepared for Imperial County in December 1981 indicates that "the exact amount of usable groundwater in the central Imperial Valley is unknown" and that "the exploitation of this resource has been insignificant because of low well yields and poor chemical quality." The Water Quality Control Plan for the Colorado River Basin (including amendments through May 2002), indicates that the establishment of numerical objectives for ground water involves complex considerations since the quality of ground water varies significantly with depth of well perforations, existing water levels, geology, hydrology and several other factors. As pointed out in the Plan, the lack of adequate historical data compounds this problem.

It is generally acknowledged that water quality in the area is poor, with high TDS levels. Monitoring well data from existing monitoring wells in the area reflects that TDS levels averaged 26,200 ppm in 1993. Data regarding other chemical parameters detected from these wells has not been located. Other

wells referenced in the Master Environmental Impact Report shows TDS levels ranging from 1,490 ppm to 15,700 ppm in 1975. Groundwater generally moves northwest with increasing salinity toward the Salton Sea, which has a TDS concentration of approximately 44,000 ppm.

The shallow aquifers are affected by the inflow of Colorado River waters, agricultural tile drains beneath farm lands, and seepage from drains and rivers. Drainage from agricultural fields has resulted in local high salinity because of the leaching of salts from these fields. The tight soils require that irrigation water remain on top of the soil for a relatively long time (up to 8 hours for furrow irrigation) to allow adequate infiltration of water into the root zone. The salts, in addition to agricultural fertilizers and pesticides, leach from the soils. Studies performed by the Regional Board and the U.S. Geological Survey indicate the drainage water in the Imperial Valley contains pesticides in quantities that often exceed the EPA's criteria for protection of fish and wildlife.

Additional characterization of the groundwater quality in the area will be performed with the installation of monitoring wells, in accordance with the Regional Water Quality Control Board's criteria.

125. Please provide hydrologic properties of the shallow aquifer beneath the site, including permeability, storativity, and transmissivity.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Please see response to CURE Data Request #123.

126. Please estimate the volume of groundwater present in the shallow aquifer.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Please see response to CURE Data Request #123.

127. Please provide a map that locates all wells within a 5 mile radius of the site that are completed in the upper aquifer, provide a copy of the well logs, and identify the use of pumped waters.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The County of Imperial Groundwater Study (June, 1996; Figures 5-7 and 5-8) shows that the upper aquifer extends to a depth of 200 feet or less in the project area. All wells owned by an affiliate of the Applicant and completed between the surface and 200 feet are shown in Attachment CDR-127. Well logs are available at the Division of Water Resources or the California Division of Oil, Gas and Geothermal Resources. No wells at the Applicant's affiliate Salton Sea facilities supply water by pumping.

128. Geothermal fluids can move upward along fracture planes and spread into permeable sediments. Faults beneath the cap rock that separates the shallow aquifer from the deeper geothermal reservoir provide for limited upward migration of geothermal fluids.1

(a) Is the applicant aware of any evidence from existing geothermal operations of injectate migration into the shallow aquifer? If yes, please describe all known instances and provide all supporting information.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The Applicant is not aware of any evidence of injectate migration into the shallow aquifer.

(b) Is the applicant aware of any evidence from existing geothermal operations that shows that there is no injectate migration into the shallow aquifer? If yes, please provide all such evidence.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Please see response to Data Request #128(a).

(c) Has the applicant conducted any studies to determine if its proposed injection program would impact the shallow aquifer? If yes, please provide copies of all such studies.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

[1] S.C. Arnold, Near-Surface Groundwater Responses to Injection of Geothermal Wastes, Report DOE/ID/12347-T1, June 1984.

Please refer to page WATER-22 of the Applicant's response to CEC Data Adequacy comments.

(d) Have any field studies been conducted in the Salton Sea Geothermal Resource Area to determine if brine injection is impacting overlying aquifers? If yes, please provide copies of and/or references to all known studies.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The Applicant is unaware of any specific studies in the Salton Sea Geothermal Resource Area conducted to determine if brine injection is impacting overlaying aquifers, other than those identified in the AFC (CEC docket log number 26373) and Supplement (CEC docket log number 26734).

129. The Phase I Site Assessment indicates that there is one drinking water well within 1/8 to 1/4 mile of the site and two within 1/2 to 1 miles of the site. Please provide logs for these two wells, locate them on a map, and evaluate the impact of the Project on their capacity and quality.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The wells indicated in the Phase I Site Assessment are not owned by the Applicant. Furthermore, the Applicant is not able to request these data from the California Department of Water Resources as they are not public domain documents (see California Water Code Section 13752(b)).

130. Please identify the water quality requirements for all proposed uses of the IID fresh water.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Please refer to CEC Data Request Response #80 previously submitted by the Applicant.

131. Please support your conclusion that alternative sources of water are not suitable, by presenting your analysis and all supporting information including the location of each source, quantity of water available, and composition of water available.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Please refer to the response in Data Request 130 above.

132. Please locate all known springs and mud pots in the area on a map and provide descriptive information for each, including flow rate, biota present, and recreational or other uses.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Springs and mud pots in the area of the Salton Sea geothermal field are described in Sturtz, Anne, D. German and D. Putnam,1998, "Salton Sea Geothermal Area Mud Pots: 1991-1998", in Geology and Geothermal Resources of the Imperial and Mexicalli Valleys, San Diego Association of Geologists, Annual Field Trip, October 1998, p. 109-128.

133. Please evaluate whether the Project would impact these resources. Support your analysis with engineering calculations, model output, and all other relevant information.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Mudpots located near the intersection of Schrimpf and Davis Road mudpots are over 2 ½" miles away from the nearest proposed Unit 6 well. There have been no changes in the mudpots attributable to the more proximal Elmore and Leathers developments after more than twelve years of operation. No change is expected with the addition of Unit 6.

Geology

134. Please evaluate worst-case impacts of improving the stability of the existing embankment, including biology, air quality, noise, and water resources.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The analyses presented in the AFC included the construction of the new perimeter berms and fortification of the existing berms (see AFC Sections 3, 3.3.5.6, 3.3.5.7.1, 4.3.1.2, 5.1.2.2.1, 5.2.2.1, 5.3.2.1.4, 5.4.2.1.3, 5.5.2.1, 5.6.1, 5.7.2.1, 5.8.2.1.1, and 5.11.2.2.1). Therefore, no additional analyses are required.

135. Please evaluate and discuss the potential impact of soil conditions beneath the clarifier tanks.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The project is located in a seismic zone 4 and will be designed and constructed to meet the current design standards for this seismic zone. These design standards will incorporate the recommendations presented in the Geotechnical Investigation, as appropriate.

136. Please discuss the mitigation measures that will be implemented to prevent a release of the tank contents during a seismic event. Please provide all evidence that such measures ensure that the impact from a seismic event on the clarifier tanks would not be significant.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The clarifiers are located in an area that is entirely contained in a concrete bermed area (AFC Figure 3.3-1 and AFC Section 5.14.2.2). In the event of a release from the clarifiers, the release would be directed to the brine ponds, which have been designed with ample capacity to contain all geothermal

fluids that could potentially be released because of equipment failure or upset conditions.

137. Please provide the subsidence data compiled by the applicant, cited in the AFC, Section 5.2.1.4.4, page 5.2-10, and relied on in the subsidence and settlement discussion to conclude that differential settlement would not occur. Please provide all other evidence that differential settlement would not occur. Your response should include a map that shows the locations where subsidence is measured and include at least 10 years of individual measurements at each monitoring station.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Areas of subsidence and inflation have been detected across the Salton Sea geothermal field area. However, differential elevation changes across individual parcels are minor and have not adversely impacted the irrigation systems or the existing power plants.

The annual subsidence reports are on file with the Imperial County Department of Public Works and the California Division of Oil, Gas and Geothermal Resources.

138. Please reconcile the results of the Layton study cited above with the conclusions in the AFC.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The Layton report cited regional elevation changes due to faulting prior to development of the geothermal resources at the Salton Sea. Recent elevation changes at the Salton Sea are also along suspected fault zones and, therefore, can be attributed to continued regional tectonic and basinal subsidence activity, not geothermal development.

139. Please present an analysis similar to that by Layton that demonstrates that injection of only 83% of the produced fluid over the 30 year project life would not affect the land slopes and hence the gravity-feed irrigation canals in the area.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Observed subsidence rates at each of the five developed areas are an order of magnitude less than those predicted by the Layton Model. Much of the deficit between fluids being extracted and injected is likely compensated by recharge in the strong geothermal system. Widely spaced production wells have also minimized subsidence above the geothermal reservoir.

140. Please describe the monitoring that the applicant proposes to evaluate subsidence from localized fluid withdrawal.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Leveling surveys (2nd Order Class I) across the Salton Sea geothermal field are reported to regulatory agencies in accordance with existing Conditional Use Permits. It is anticipated these agencies will require similar monitoring.

141. If the subsidence monitoring described in response to Data Request #140 shows a change in land slope, will the applicant commit to COCs that require repair of any irrigation canals, releveling canals or fields, changes in field operation, and/or reimbursement of land owners for lost production?

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

No. The Applicant believes it is premature to devise a condition of certification for a circumstance that is unlikely to occur, for which there is no evidence of significant impact, and which has not taken into consideration any other factors contributing to the causation of such a circumstance.

142. Deep foundations, consisting of piles driven 3 to 4 feet below grade into dense sands, would be used to prevent settlement. (AFC, p. 5.2-15, Geo-4.)

(a) Please present a pile driving schedule that shows the number of pile drivers that will be in operation per month by location.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

A pile driving schedule has not been developed at this stage of project development.

(b) Please identify the type and horsepower of the pile drivers that will be used.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The type of equipment that would likely be employed is as follows:

1. Drill rig: Cummings Model M-11-C350 with a diesel engine rated at 350 bhp.

2. Forklift: Petibone Super 30 with a Detroit 671 diesel engine rated at 230 bhp at 2300 rpm.

3. Crane: Manitowoc Model 3900B with a diesel Cummings NTC335 engine rated at 300 hp.

(c) The emission inventory in Appendix G does not include any emissions from pile driving. Please estimate pile driving emissions.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Pile driving emissions during construction are as follows:

NOx	3.3 Tons per year
CO	1.5 Tons per year
VOC	0.4 Tons per year
SOx	0.05 Tons per year
PM10	0.2 Tons per year

Noise

143. Please prepare a construction noise analysis based on the worst case month that considers multiple sources of noise simultaneously. Please support your analysis by identifying the basis for selecting the worst-case month, each piece of equipment assumed to be operating, its noise level, and any noise controls assumed to be used.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The CEC will determine if additional information is required.

144. Please provide complete data input and output files for all noise analyses.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The CEC condition of certification will establish a noise limit. The data supplied in Table 5.11-4 is representative of the equipment that will be installed.

145. The power plant source sound levels are summarized in Table 5.114. Please provide vendor data that supports these values.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

As provided by the vendors, noise data for equipment that will be installed at the facility is presented as follows:

Cooling Tower

Manufacturer: Marley Cooling tower

Model: *W499-12.0-9*

Description: Marley W499-12.0-9 class 400 tower, 9 cell tower; splash-filled industrial wood counterflow mechanical draft.

Sound Power Level:

Air Outlet -

Octave Band Center Frequency (Hz)	Fan Sound Power Level	Speed Reducer Sound Power Level	Sound Power Level per Cell	Sound Power Level per Tower	Fan Attentuation	Total Sound Power Level
31.5	108.4	82.1	108.4	117.9	0.0	117.9
63	108.4	82.1	108.4	117.9	0.0	117.9
125	108.4	86.1	108.4	117.9	0.0	117.9
250	104.4	88.1	104.5	114.0	0.0	114.0
500	101.4	87.6	101.5	111.1	0.0	111.1
1000	98.4	86.4	98.6	108.2	0.0	108.2
2000	90.4	82.6	91.0	100.6	0.0	100.6
4000	86.4	78.1	87.0	96.5	0.0	96.5
8000	82.4	73.6	82.9	92.4	0.0	92.4
Overall	103.3	90.6	103.5	113.0		113.0

Air Inlet -

Octave Band Center Frequency (Hz)	Water Sound Power Level per side	Fan Sound Power Level per side	Combined Sound Power Level per side	Air Inlet Attentuation	Total Sound Power Level per side
31.5		109.9			
63		116.1			
125		112.1			
250	83.9	110.4	110.0	0.0	110.0
500	88.9	104.3	116.1	0.0	116.1
1000	90.9	101.9	112.1	0.0	112.1
2000	93.9	98.3	110.5	0.0	110.5
4000	101.4	86.6	106.1	0.0	106.1
8000	106.4	71.9	107.8	0.0	107.8
Overall	106.9	107.6	107.5	0.0	107.5

Auxiliary Cooling Water Pumps

Manufacturer: Floway
Model: Model 29 MKN

Description: 13,750 GPM at 92' TDH, single stage vertical turbine in all 316 stainless steel construction consisting of the following:

28 MKN product lubricated bow assembly in all 316 stainless steel material of construction including bowl and imp wear rings.
316 stainless steel basket strainer.

"FR" fabricated discharge head in 316 stainless steel with packed box.
(25') of 1-15/16" x 20" bolted column assembly in 316 stainless steel construction.
400 HP, 1800 RPM, 3/60, 4160 V, WPII, VHS motor with class F insulation, premium efficiency and 1,15 SF.
Sound Power Level:
Overall dBA: 85 dBA @ 3 ft.

Octave Band Hz	Sound Pressure Dba
125	75.8
250	80.9
500	82.4
1000	77.3
2000	76.7
4000	70.9
8000	85.6

Cooling Water Circulation Pumps
Manufacturer: Patterson
Model: A 1
Description: 120,000 GPM at 92' TDH, single stage vertical turbine pump in all 316 stainless steel construction consisting of the following:

(1) 60" product lubricated bow assembly in all 316 stainless steel construction including bowl and imp wear rings.
(1) 60" 316 stainless steel strainer.
(1) 60" 316 stainless steel fabricated discharged head with packed box.
(25') 52" dia. bolted column and shaft assembly in 316 stainless steel material of construction.
(1) fabricated steel bearing housing
(1) 3500 HP, 450 RPM, 3/60 4160 V, WP II, VSS motor with class F insulation, premium efficiency and 1,15 SF.

Sound Power Level:

Overall Noise Level: 82 dBA @ 3 ft.

Octave Band Hz	Sound Pressure Dba
125	80
250	81
500	81
1000	79
2000	77
4000	75
8000	71

Turbine

Manufacturer: Fuji Electric
Model:

Description: Turbine - 2 casing, 4 exhaust flow, m reaction, condensing, triple press (HP/SP/LP) inlet, HP inlet steam, SP inlet steam, LP inlet steam; direct coupling; bottom exhaust; non-skid mount, outdoor.
Generator – TEWAC type, 205.6 MVA, 0.9 (lagging) power factor.

Sound Power Level:

Octave Band Hz	Turbine dBA	Generator dBA
63	72	69
125	82	82
250	81	78
500	85	82
1000	84	86
2000	80	82
4000	74	76
8000	68	65
Overall	90	90

Diesel Generator

Model	3516B	3456
Nominal Size	2000 kW	300 kW
Fuel	DIESEL	DIESEL

Sound Noise Data at 22.9 feet.

Overall dB Hz	98	91
63 Hz	100	81
125 Hz	109	87
250 Hz	100	95
500 Hz	92	86
1000 Hz	89	83
2000 Hz	90	81
4000 Hz	87	76
8000 Hz	91	82

Sound Noise Data at 49.2 feet.

Overall dB Hz	92	84
63 Hz	94	75
125 Hz	103	81
250 Hz	94	88
500 Hz	86	79
1000 Hz	84	77
2000 Hz	84	76
4000 Hz	82	72
8000 Hz	86	75

Brine Injection Pumps
Manufacturer: Byron Jackson
Model: 24 x 24 x 31 DVS

Description:
Sound Power Level: Calculated free field sound pressure at a height of 1.5 meters above the floor. dB values referenced to 0.00002 N /sq. m.

Pump –
Flow: 10,000 gpm
Head: 649 ft.
RPM: 1400

Octave Band Hz	Sound Pressure dB
31.5	70
63	80
125	87
250	91
500	88
1000	84
2000	83
4000	79
8000	75

Pump	90 db(A)	at 1 meter distance
Driver Sound	90 db(A)	at 1 meter distance
Total Sound	93 db(A)	at 1 meter distance

Pump –
Flow: 10,000 gpm
Head: 302 ft.
RPM: 1000

Octave Band	Sound Pressure

Hz		dB
31.5		66
63		73
125		83
250		84
500		84
1000		80
2000		79
4000		75
8000		71
Pump	86 dB(A)	at 1 meter distance
Driver Sound	90 dB(A)	at 1 meter distance
Total Sound	92 dB(A)	at 1 meter distance

Pump –
Flow: 10,000 gpm
Head: 800 ft.
RPM: 1550

Octave Band Hz		Sound Pressure dB
31.5		70
63		80
125		87
250		91
500		88
1000		84
2000		83
4000		79
8000		75
Pump	91 dB(A)	at 1 meter distance
Driver Sound	90 dB(A)	at 1 meter distance
Total Sound	94 dB(A)	at 1 meter distance

Notes:

1. db(A) values are calculated using octave band correction factors per ANSI S1.4.
2. Calculated total sound pressures given above assumes that the equipment is in a non-reverberant field. Mesurements of pump noise at final installation must allow room acoustics as well as the noise of background, auxiliary systems, support structure and suction and discharge pipe noise radiation.

146. Octave band sound levels were not provided for the pumps. Please explain how octave band sound levels were accommodated in the Cadna Model.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Please refer to response to CURE Data Request 145.

Agriculture and Soils

147. Please describe the pesticide application schedules and procedures currently employed for farmed areas along the transmission routes and other Project facilities that may pose a hazard to crop dusters.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Procedures and schedules for pesticide application are made by farmers and pilots, not the Applicant.

148. If aerial spraying is currently or may be used along in the vicinity of any of the Project facilities, please evaluate the impact of these facilities on pesticide application procedures.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

There is no evidence that project facilities would have any impacts on pesticide application procedures. It should be noted that the Imperial County Airport Land Use Commission made a Finding of Project Consistency September 19, 2002.

149. Please chronicle any historic accidents involving crop dusting or constraints on development of farmland that have been experienced in the area over the past 10 years.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

No crop dusting aircraft has ever collided with any of the Imperial Valley facilities of the Applicant's affiliates. It should be noted that the Imperial County Airport Land Use Commission made a Finding of Project Consistency September 19, 2002.

150. Please provide a reference for the Chepil Wind Erosion Equation, cited on page 5.3-8 of the AFC.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The requested reference is presented below.

Woodruff, N.P. and Siddoway, F. H. 1965. A wind Erosion Equation. SSSA Proc. 29:602-608.

151. Please explain with specificity why the Chepil equation is not appropriate for the site. Please support your answer with references to the published literature and supply copies of any references that are not publicly available.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

There are several accepted conventions for predicting wind erosion of soil materials. Agricultural approaches are largely based upon the work of Chepil in the 1950's which defined wind erosion with the following function:

E = f{I, K, C, L, V}

Where, E = potential average annual soil loss, I is a soil erodibility index, K is a soil ridge roughness factor, C is the climate factor, L is the unsheltered distance across a field (fetch), and V is the equivalent vegetative cover (Brady, 1991). The empirical work of Chepil and the above equation are the basis for the Wind Erosion Equation currently utilized by USDA-NRCS (Natural Resource Conservation Service). Factor V, which reflects a cover crop as well as management factors (e.g., contour cropping) is the most easily manipulated factor, although wind breaks allow reduction in L as well.

As with water erosion equations, such as RUSLE (revised universal soil loss equation), Wind Erosion Equation (WEQ) has been developed for agricultural applications. Wind tunnel studies and empirical tests conducted during development of WEQ specific to agricultural applications minimize its value in non-agricultural uses. In disturbed or non-agricultural soil, such as a construction site, a variety of management considerations (e.g., best management practices such as straw cover, sealants) have no equivalent factor in the WEQ equation. Extrapolation of these factors, such as V, to reflect a sealed, covered, or mechanically compacted soil would yield unreliable wind erosion prediction results.

Recently, attempts were made by CH2M HILL soil scientist to use several models, originally developed for agricultural applications, to predict soil

erosion from road cuts. Predicated erosion losses were highly variable among these models, indicating that their use on a non-agricultural application was inappropriate. It is likely that use of WEQ on disturbed construction site will result in similar failure to yield reliable results.

The U.S. EPA industrial wind erosion equation is limited by the same factors as the Chepil-WEQ model. Developed more specifically for use in aggregate piles, the industrial wind erosion equation predicts the loss of PM-10 and larger-size particles from piles, considering such factors as pile surface area, wind velocity, and the nature of the material. As with WEQ, this equation was developed specific to aggregate materials. Erosion potential factors would likely be inappropriate with any manipulation of the exposed soil (e.g., watering, sealants).

If possible, wind erosion prediction may be more appropriately performed by reviewing any empirical information available. For example, studies relating construction site conditions (per region) to measured wind erosion. If such conventions exist, they would likely yield more accurate estimates of wind erosion losses at Salton Sea Unit 6 than predictive models.

152. There are alternatives to the Chepil Wind Erosion Equation that could be applied to the Project site. These include the USDA Wind Erosion Equation (USDA 1998) and the U.S. EPA Industrial Wind Erosion Equation. (AP-42, Sec. 13.2.5.) Please explain why these equations could not be adopted to estimate wind erosion from the Project site.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Please see response to CURE Data Request #151.

153. Please identify all wind erosion control measures that would be implemented during construction and operation of the Project.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Wind erosion losses may be reduced using best management practices that are also appropriate for prevention of water erosion losses. Maintenance of some form of soil cover, whether geotextile mats (temporary) on exposed

pile or surfaces, straw cover, gravel, or other means of mechanical stability may be utilized. Chemical sealants, such as surface applications of polyacrylamide, resin, or other sealants are commonly applied for dust prevention, whereby the intensity and depth of the application depends upon the nature of the material and how long it is needed. A number of vendors specialize in selling and application of sealants. In many instances, water is periodically sprayed on emissive surfaces to improve soil stability and reduce dust losses.

Temporary or even permanent vegetation provides another means by which soil is mechanically stabilized (by roots), covered (to prevent direct scouring and saltation from wind-suspended particles). Vegetation also improves soil moisture status, making it less emissive.

Best management practices for wind or water erosion prevention may also be used in combination with methods to reduce non-point source losses, such as straw bales and silt fences. Erosion and runoff of soil materials off site not only may affect water quality in the surrounding area, but simply move emissive materials off site, where they are far more difficult to control.

Project Description

154. Please revise Figure 3.3-9 to show the reverse osmosis system.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Please see the attached file Fig. 3.3-9r1.

155. Will the RO system be used to supply any process water? If yes, please identify the uses and flow rates.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

No.

156. Please provide design information on the RO system.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Please refer to Attachment CDR-156.

157. Please provide complete chemical characterization data for the RO inlet, outlet, and reject stream. Data should be provided for all of the constituents listed on the inset tables on the heat/mass balances in Figures 3.3-10.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Please refer to Attachment CDR-157.

158. Please explain the basis for proposing two transmission lines, instead of one, for the project and provide all justification you have for your answer?

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

IID selected two transmission lines in order to ensure reliability to their rate payers (Personal Communication, IID, 2002)

159. Please resolve the apparent discrepancy between the Project lifetime and the Project's contracts for services.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

There is no "discrepancy" to resolve. The project has a design life associated with it, and that design life exceeds the contractual terms that were negotiated with the IID.

160. Please identify the water supply that would be used at the end of the 21 year life of the Will Serve Letter.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Continued IID supply is anticipated.

161. Please discuss operational modes and their environmental impacts after the IID contact terminates.

(a) Will SSU6 remain a base loaded facility?

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

SSU6 would remain a base load facility.

(b) If the answer to subpart (a) is no, please identify potential changes in operational mode. For each, discuss potential changes in environmental impacts.

Response:

N/A

Public Health

162. Please provide complete chemical composition data for the carbon backwash.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The carbon "back wash" will result in two (2) distinct phases – a water layer and a solvent (benzene) layer. The water layer is expanded to contain approximately 0.09 wt% benzene and the solvent/benzene layer is estimated to contain approximately 0.054 wt% water.

163. The heat/mass balance in Figure 3.3-10D suggests that only the steam condenser gases would be treated using an activated carbon filter. Will the brine stream additionally be treated using an activated carbon filter to remove benzene?

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

No.

164. If the answer to Data Request #163 is yes, please describe the process that would be used to treat the brine stream(s) and revise Figs. 3.3-10 to show the stream(s) that would be treated.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Please see item #163.

165. Please describe the carbon filter regeneration process and provide a process and instrumentation diagram ("P&ID").

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Regeneration is accomplished by heating the carbon directly with saturated steam. As the adsorber heats up, the solvents are stripped from the carbon and the steam/solvent mixture flows into a shell and tube condenser where the vapors are condensed and cooled by indirect heat exchange with cooling water. The condensed water/solvent mixture then flows by gravity and is returned to the process for reinjection.

After regeneration is completed, ambient air is introduced into the adsorber utilizing a cooling blower. This cooling cycle is used to remove moisture and heat from the adsorber for higher efficiency adsorption.

Following regeneration, the bed is placed on standby until required. Based on current design, the adsorbers are expected to regenerate once per day.

166. Please describe the method(s) that will be used to control benzene vapors during the regeneration process.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Benzene vapors created during the regeneration process will be controlled via condensation in a shell and tube heat exchanger (utilizing cooling water as the cooling medium). The vent from this condenser will be routed back to the inlet of the carbon adsorption system. Therefore there will be no benzene emissions into atmosphere during the regeneration process..

167. Are there any air pollutant emissions from the regeneration process?

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

No.

168. If the answer to Data Request #167 is yes, please estimate the emissions and revise the risk assessment to include them. If the answer to Data Request #167 is no, please provide all evidence that supports your answer.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Please see response to Data Request #167.

169. The AFC indicates that the greatest potential for benzene exposure is during the handling of spent carbon absorption drums, but dismisses this as a concern because a service vendor will service these drums. (AFC, p. 5.16-10.) However, impacts from handling the drums may be significant regardless of which company services the drums.

(a) Please describe the carbon drums and the procedures that will be used to fill, store, and transport them.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The service vendor will provide carbon change-out services, including transportation. Prior to this service, any residual gaseous benzene will be removed from the carbon vessels by purging the vessel with steam. This will mitigate exposure of carbon-service personnel and prevent emissions of benzene to the atmosphere when the vessel is opened.

(b) Are there any air pollutant emissions from these drums?

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

No.

(c) If the answer to subpart (b) is yes, please estimate emissions from handling of carbon drums and evaluate the worker and public health impacts of handling them. If the answer to subpart (b) is no, please provide all evidence that supports your answer.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Please see response to Data Request #169 (a).

170. Please prepare a cancer risk analysis for diesel exhaust emissions during construction of on-site and linear facilities, assuming a 9year, 30-year, and 70-year exposure duration.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

A cancer risk analysis for diesel exhaust emissions during construction has already been performed. Refer to CEC Data Response 56 for additional information.

171. Is the applicant willing to use oxidizing soot filters on all applicable equipment to mitigate the impacts from Project construction? If no, please justify your answer.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

No. As noted in CEC Data Response 56, the calculated construction cancer risk level is 2.5 in one million at the maximum impact receptor. Because the cancer risk was predicted to be below the health significance criteria of 10 in one million, significant cancer impacts are not expected; therefore, no further mitigation is required.

Waste Management

172. There is a Memorandum of Understanding between the CEC and the Department of Toxic Substances Control ("DTSC") that requires DTSC to review Phase I ESAs. The AFC contains no evidence that DTSC has reviewed the Salton Sea Phase I.

(a) Has the Phase I been submitted to the DTSC for review?

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

No.

(b) If the answer to subpart (a) is yes, please provide DTSC's review comments on the Phase I.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

N/A

(c) If the answer to subpart (a) is no, please submit the Phase I to DTSC pursuant to the MOU and provide the comments when they are available.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The CEC staff will forward the appropriate information to the DTSC for review.

173. Lands that were farmed before organochlorine pesticides were banned frequently contain elevated concentrations of these pesticides that are high enough to pose a significant health risk to exposed construction workers. Thus, it is prudent to characterize those soils that workers will be exposed to and evaluate them for potential health risks.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

This is a statement of the Intervenor's opinion, not a Data Request. As such, the Applicant provides no response.

174. Please conduct a Phase II site assessment that addresses the four environmental conditions recognized in the Phase I site assessment.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The CEC will determine if additional information is required.

175. The AFC indicates that workers would be trained to identify potentially contaminated soil and on proper procedures for handling such soil. (AFC, p. 5.13-2.) However, this is not identified as a mitigation measure. Further, it is not feasible to identify the types of contaminated soil likely present at the site without using chemical analysis.

(a) Please explain the procedures that would be used by workers to identify pesticide-contaminated soils.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Workers involved in site preparation would be trained and prepared to encounter soils containing hazardous wastes. Training would include, as appropriate for the work to be performed, Hazardous Waste Operations (8 CCR 5192) and Hazard Communication (8 CCR 5194). Workers that are not involved in soil moving activities and are not exposed to dust from soil moving activities should not need the full 40-hour training. The requirements of 8 CCR 5192 allow workers involved in activities with minimal exposure to contaminants, such as land surveying, to take a 24-hour training course.

(b) If the procedures identified in subpart (a) do not including monitoring, would the applicant accept a COC that required on-site screening of soils prior to disturbance? If no, justify your answer.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

As stated in the AFC (p. 5.13-2), "[i]f stained or odiferous soil is encountered during grading or construction, the soil would be segregated and analyzed." This procedure, in combination with the procedures identified in subpart (a), is adequate.

176. The Phase I indicates that there are three existing geothermal wells on the site, two of which are active production wells.

(a) Please modify the plot plan in Figure 3.3-1B to show the location of these three wells.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The wells referred to in this question are located south of the site and do not impact Figure 3.3-1B.

(b) Will these existing wells be used to supply the Project? If no, which existing facility do these wells supply?

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

These existing wells will not be used to supply the project. They will continue to supply Hoch and Vulcan plants.

(c) Will these wells be abandoned as part of or in conjunction with the Project? If yes, please provide a schedule for abandonment.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

No.

(d) Were these wells considered in the cumulative impact analyses?

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

No. Existing wells are considered part of the existing environmental conditions and are not otherwise relevant to the cumulative impact analysis.

(e) If the answer to subpart (d) is yes, please provide all information that supports your answer, including associated air pollutant emissions.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

N/A.

(f) If the answer to subpart (d) is no, please modify the cumulative impact analysis to include the three existing geothermal wells.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Please see response to CURE Data Response #176(d).

(g) Are the mud pits associated with these wells still present on site?

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Mud sumps are permitted by the Regional Water Quality Control Board. While Regional Board regulations establish "closure" requirements for these sumps, they contain nonhazardous material while in use. Regional Board requirements establish the requirement for removal of the produced material, but the areas are allowed to remain for future use upon approval of the Regional Board.

(h) If the answer to subpart (g) is yes, please locate them on the revised plot plan provided in response to subpart (a).

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Please see response to CURE Data Response #176(a).

(i) If the answer to subpart (g) is no, please describe the abandonment procedures that

were used.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Please see response to CURE Data Response #176(g).

177. The site is currently bounded on two sides by berms that would be improved to serve as flood control protection for the site. Historically, filter cake with elevated concentrations of arsenic, radon, and other contaminants, were used to construct berms in the general area. Please provide chemical analyses of the soils in these existing berms that would be disturbed during Project construction.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Disturbance to the existing berms is expected to be minor, as improvements to these berms will be accomplished by adding fill material to bring them up to the finished grade elevation required for flood protection.

Land Use

178. Please revise Figure 5.8-1B and all corresponding analysis of impacts and compliance with LORS to reflect that the National Wildlife Refuge boundary begins directly across the northern berm road from the Project site.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The Refuge does not have any ownership interest in that portion of the northwest quarter of section 33 that lies directly across McKendry Road to the north of the proposed plant site. The IID has leased this land to the Refuge on a month-to-month basis but will cease to do so because of the project. Figure 5.8-1B was prepared in contemplation of the IID ceasing to lease this property to the Refuge. However, the areas north of the proposed locations of well pads OB-1 and OB-2 were shown as continuing to be Refuge-leased lands in order to indicate that the Applicant wishes for the Refuge to be able to continue to utilize this area after the project is underway. In particular, the Applicant has no plans to interfere with the marsh north of the proposed location of well pad OB-1 and anticipates that the Refuge's use of this area can continue uninterrupted.

179. Please provide the contract for the refuge leasing property from IID for the Salton Sea refuge.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

This is a document that Applicant believes is publicly available. Applicant does not have a copy of the referenced document in its possession.

180. Please provide a copy of your application for a CDCA Plan Amendment.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The Applicant has not submitted a CDCA Plan Amendment application.

181. Please identify whether you plan to close Obsidian Butte to the public and provide all

information you may have on the potential socioeconomic and environmental impacts.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The Applicant has no such plan.

182. Please identify the existing extraction uses at Obsidian Butte.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The IID uses Obsidian Butte for an aggregate barrow pit.

183. Please revise all cumulative impact analyses to Obsidian Butte based on your answers to the two prior Data Requests.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Extraction uses of Obsidian Butte are pre-existing (part of existing environmental conditions) and are not otherwise relevant to a cumulative impacts analysis.

Biology

184. Please reconcile whether the survey conducted by Ogden in 1994 detected five clapper rail locations (AFC, p. 5.5-9) or eight (8) clapper rails (Appendix K, p. 8-1).

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

As noted, the AFC summarizes surveys in 1994 as reporting 5 locations and 8 individuals. The two statements are not contradictory, but provide different information. The data infer that more than one individual was detected from some locations. The available information does not specify whether or where multiple detections occurred. Because the birds are locally and seasonally common, the distinction between 5 locations and 8 individuals is not significant for purposes of evaluating potential impacts.

185. Appendix K is missing some of the survey results and data for Yuma clapper rail in 1994, 2001 and 2002. Please provide all survey results and data for Yuma clapper rail that you have.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The Applicant will provide all results and data that are available to it. However, as noted above the Applicant agrees that Yuma clapper rails are or may be present in the marsh northwest of the project site and that appropriate avoidance and mitigation measures will be taken. Additional historical data therefore would have little or no effect on the impact analysis or mitigation proposed.

186. Please explain whether California fully protected Yuma clapper rails 1) detected in 1994 at a potential well pad site at the Southwest Corner of Sinclair Road and Lateral Drain 4-A and 2) detected in 2001 along the east side of Well Pad OB1 were detected at the same location in both years or at two separate locations.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The Applicant will provide all clapper rail results and data that are available to it. However, particularly with respect to historical data, it may not be possible to determine if clapper rails were identified at the same location. As noted above, the Applicant has agreed that clapper rails are or could be present in the marsh habitat northwest of the project site. Therefore, identifying the precise location where clapper rails have been detected in the past would not change the evaluation of impacts or the appropriate avoidance and mitigation measures proposed.

187. The AFC contains no analysis of the potential impacts to Yuma clapper rails and their habitat at the Southwest Corner of Sinclair Road and Lateral Drain 4-A and along the east side of Well Pad OB1, which is located in the Sonny Bono National Wildlife Refuge. Please provide an analysis of the project's impacts on the Yuma Clapper rail at these locations.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The AFC describes the subject area as follows (p. 5.5-15) :"The proposed location of Production Well OB1 and the associated 300-foot by 700-foot grading footprint is adjacent to a freshwater marsh that supports Yuma clapper rail."

The AFC indicates that the most likely impacts to clapper rail are from noise at the well site.

Page 5.5-9 of the AFC addresses potential impacts of the OB1 well pad site (which is the project feature closest to the corner of Sinclair and Lateral Drain 4-A) as follows:

"Yuma clapper rails within 890 feet of Production Well Pads OB1, OB2, and OB3 would be potentially exposed to sound levels that exceed 60 dBA Leq. Because no well pad development would occur at these well pads during the breeding season (March through July), no significant impact would occur…."

Well Pad Operation. Acoustical calculations were performed as described for well pad development above to estimate the location of the 60 dBA Leq noise contour from operation. The contour is approximately 30 feet from the noise source and will remain within the boundaries of the well pad. No significant noise impacts would occur."

Page 5.5-18 of the AFC provides the following analysis of impacts on the Yuma clapper rail in the pond northwest of the project site:

"Sound levels as a result of plant construction within the Yuma clapper rail habitat located to the northwest and west would range from 51 dBA to 70 dBA. Sound levels would be at the higher range when working near the habitat and at the lower range at the farther point from the habitat. The USFWS considers 60 dBA Leq hourly to be the threshold of significance for breeding birds. Therefore, the Yuma clapper rail may be significantly impacted by construction noise during the breeding season. Other listed species present in the project vicinity as non-breeding individuals would not be significantly impacted by construction noise."

Page 5.5-21 addresses the impacts of OB3, located west of the freshwater marsh pond as follows:

"Construction of the production wells outside the plant site will result in the long-term loss of approximately 16.8 acres of agricultural land, 4.8 acres of disturbed habitat, and 1.99 acres of desert sink scrub. This does not represent a significant impact on biological resources, and no sensitive species will be affected by this project component. Construction of Production Well Pads OB1, OB2, and OB3 will occur during the non-breeding season."

Page 5.5-22 provides another statement of the impacts of development at OB3 on clapper rails as follows:

"Yuma clapper rails within 890 feet of Production Well Pads OB1, OB2, and OB3 would be potentially exposed to sound levels that exceed 60 dBA Leq. Because no well pad development would occur at these well pads during the breeding season (March through July), no significant impact would occur."

188. Please provide an analysis of the project's impacts on fully protected Yuma clapper rails in the freshwater marsh pond adjacent to the northern boundary of the project study area that is located in the Sonny Bono National Wildlife Refuge.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Please see response to Data Request #187.

189. Please provide an analysis of the potential habitat for the Yuma clapper rail in Vail Drain 5 along Severe Road (AFC, Appendix K, p. T-4), the proposed Well Pads, OB-4 and OB-5, and the project site, which are proposed along Vail Drain 5, and the impacts to Yuma clapper rail and their habitat.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Vail Drain 5 is a particularly large (approximately 15 feet wide) and deep (greater than 4 feet) canal near Severe Road, supporting a very narrow and dense stand of common reed. As noted on Page 5.5-9 of the AFC, Yuma clapper rails prefer "extensive and undisturbed marshes for foraging and nesting,"

By contrast, the marsh northwest of the project site, known to support Yuma clapper rails, is dominated by cattails, sedges and bulrush. The marsh is relatively shallow, and the cattail vegetation allows clapper rails to walk among and between the cattails, searching for snails and insects to eat. By contrast the water in Vail Drain 5 is too deep to support cattail vegetation for cover and would not be attractive to the normally secretive clapper rail. Common reed, which forms the adjacent vegetation in Vail Drain 5, forms a dense tangle of rhizomes and shoots through which a clapper rail would have difficulty walking. Because the habitat along Vail Drain 5 is generally not the type preferred by clapper rails, and the adjacent marsh does support cattail and marsh habitat, it is unlikely that clapper rails use the Vail Drain 5 for anything more than occasional foraging.

Well Pads OB-4 and OB-5 and the project site are open agricultural habitat, currently planted in broccoli. The absence of cover (such as dense cattail or bulrushes) would make it unlikely that clapper rails would use this area. This analysis is supported by the locations where clapper rails were observed, as represented in sensitive species locations.

190. Please revise your analysis of cumulative impacts to Yuma clapper rails and their habitat in light of your responses to the prior Data Requests.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The Applicant believes the AFC information regarding the known historical locations of clapper rails and the analysis of cumulative impacts to the Yuma clapper rail is complete and accurate.

191. Please provide all evidence that supports a conclusion that impacts to Yuma clapper rails and their habitat (AFC, Appendix K, p. 8-1) is consistent with the Fully Protected Species provisions of the Department of Fish and Game Code.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The Applicant has designed the project to avoid conversion of freshwater habitats fundamental to the continued survival and reproduction of clapper rail. Further, because the clapper rail is such a secretive bird, and tends to stay close to dense cover, clapper rails rarely would stray out of the dense marsh cover in the Sonny Bono Salton Sea National Wildlife Refuge Complex. The Applicant has proposed measures to avoid and minimize the potential for impacts to the fully protected Yuma Clapper rail (see Pages 5.5-24 et sequitur) and believes these measures will be effective. Furthermore, the Applicant presently is consulting with the California Department of Fish and Game (CDFG) regarding potential project impacts to Yuma clapper rail and anticipates that CDFG will confirm that the project as proposed will not result in adverse impacts to Yuma clapper rail.

192. The AFC does not document the methods used for the desert pupfish surveys. Please provide a copy of all surveys cited in the Biological Assessment in Appendix K, Table 4, including a description of the methods used, water and air temperatures, the exact location, date, time, duration, and results of the studies, and the names and qualifications of the individuals conducting the surveys.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Prior to 2002, desert pupfish surveys were conducted by different researchers, and compiled by the CDFG, which provided the results to the Applicant. The methodologies used in those surveys varied from observations to overnight trapping. The Applicant has provided all information available to it regarding those surveys, and believes that the data provided by CDFG represent "substantial evidence" as defined by CEQA guidelines 15384 (a).

The Applicant has provided copies of the 2002 survey final reports to the CEC under separate cover (CEC Data Request Response Set 1, Attachment BR-16, filed on 12/2/02). Dr. Allen Schoenherr is a Ph.D. and professor of ecology at Fullerton College who has conducted previous surveys for desert pupfish in the project area, and whose credentials and qualifications are recognized by CDFG.As the Applicant states on page 5.5-8 of the AFC:

"A survey conducted by Dr. Allen Schoenherr on February 11, 2002 did not detect desert pupfish within plots along the proposed pipeline route. CDFG

surveys since 1998 have also been negative for the presence of desert pupfish." The Applicant intends to minimize the potential for adverse impact by avoiding likely habitat as stated on page 5.5-8 of the AFC:

" Habitat modification also is expected to be minimal and therefore no significant impacts to this species are expected to result from the project."

193. The AFC, page 5.5-14 states that subsequent surveys were conducted for pupfish for this Project at shoreline pools below McKendry Road after 1994 and Table 5.5-1C states that none were observed. However, Table 4 in Appendix K shows only one survey conducted at this location. Please provide a copy of the cited additional surveys.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Please see response to No. 192.

194. The AFC states that a February 11, 2002 survey was conducted along the proposed pipeline route from Well Pad OB-3. This survey is not included in AFC. Please provide a copy of this survey.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The survey in question is the same as that referenced in question 192 above and has been provided under separate cover (CEC Data Request Response Set 1, Attachment BR-16, filed on 12/2/02).

195. The AFC, page 5.5-8, states that CDFG surveys "since 1998 have also been negative for the presence of desert pupfish." However, the AFC only mentions two such surveys, conducted August 31, 2001 and February 9, 2002, which did not cover most of the potentially impacted linears and facilities. (Appendix K, BA, Table 4.) Is the applicant aware of any other surveys, conducted since 1998, that were not summarized in the AFC? If yes, please provide a copy of these surveys.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The Applicant has provided all desert pupfish survey results from the project vicinity of which it is aware.

196. Please conduct desert pupfish surveys at multiple locations along shoreline pools and drainage ditches Vail 5, 4A, 4, and 3a adjacent to production and injection well pads and pipelines as well as along all other waterways potentially impacted by construction activities, i.e. along roads and transmission lines. Please include a detailed description as above.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The Applicant believes that additional desert pupfish surveys would have no effect on the evaluation of potential impacts or the adoption of avoidance and mitigation measures, for the proposed project. The CDFG and USFWS have not requested any additional surveys to support the project evaluation.

Historical surveys show that pupfish generally occur in the shoreline pools of the Salton Sea and adjacent drains where there is no hydrologic barrier to upstream migration. In any survey effort there is a potential for adverse effect to the species through harassment, trapping, handling, or restraint. Furthermore, the Applicant already has proposed to implement measures to avoid significant impacts to desert pupfish.

197. Please provide a description of the methods employed for burrowing owl surveys, which were conducted by URS from 1999 through 2002 including time of day, frequency, and coverage of habitat.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Surveys for burrowing owl typically consist of driving or walking along project features, such as transmission lines and pipelines looking for burrowing owls, or burrows with white wash, pellets or other sign. Because there were a number of surveys occurring (avian flyover, habitat for example), burrowing owls and signs would be noted when detected in other surveys. As noted on page 5.5-11 of the AFC, burrowing owls are common in the area. Therefore a rigorous protocol survey, which would be appropriate to prove the absence of the owl , was not considered necessary. Because owls are common and could occur along various project features, it

was determined that mitigation (i.e. pre-construction surveys and relocation if necessary) to avoid adverse impacts was appropriate.

198. Burrowing owls were detected along roadways in the vicinity of the Project site. The Project would increase traffic, thus potentially placing the owls at risk of collision with vehicles. Please evaluate the impact of the increase in traffic on burrowing owl populations. Support your answer with calculations, reports, surveys, and all other relevant supporting information.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

According to Section 5.10 of the AFC,

"Operation of the plant will result in long-term, minor increases in traffic associated with plant employees and movement of vehicles serving the plant."

An unfortunate consequence of any increase in traffic is an increase in the potential risk of collision with vehicles. To the Applicant's knowledge, there are no quantitative studies or reports on burrowing owl mortality as a result of increased traffic. Burrowing owls frequently nest in the road cuts and burrows along roads throughout their range, and rarely are burrowing owls observed as road kills. The implication is that burrowing owls are observant and learn to avoid vehicles and heavily-traveled roads. Also, because burrowing owls can have as many as eight young, they can tolerate some accidental mortality without risk to the population or species. As noted on page 5.5-11 of the AFC, "burrowing owls are common in the region and a slight increase in the risk of collision with vehicles is not likely to cause a significant reduction in the population."

The Applicant believes that implementation of the Worker Environmental Awareness Training (see AFC page 5.5-24) will increase worker vigilance and care when operating vehicles in the construction area, to reduce the potential for wildlife mortality through collision.

199. Please provide an analysis of the impact of subsidence, vibration, and noise from project construction and operation on burrowing owls. Please support your answer with calculations, references to the literature, surveys and all other information that supports your conclusions.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

To the Applicant's knowledge there are no quantitative studies or reports of the impacts of subsidence, vibration or noise on burrowing owls. Burrowing owls are frequently seen nesting in railroad track berms, and near buildings and roads where vibration and noise are common and exceed the magnitude of what would be anticipated from operation of the geothermal plant. Burrowing owls are highly adaptable and frequently nest in proximity to similar activities, indicating that at least some individuals have high tolerance for disturbance.

200. Is the applicant willing to accept a condition of certification that would require adoption of a mitigation plan according to the CDFG guidelines that includes, among other things, the identification of a mitigation site and any activities necessary to enhance the site, including the construction of artificial burrows?

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The Applicant has proposed to perform pre-construction surveys to minimize the chance of directly affecting nesting burrowing owls, and to perform passive exclusion if necessary to temporarily prevent owls from nesting in a location where individuals might be harmed. The Applicant believes the proposal is adequate to avoid significant adverse impact to the species.

201. If your response to the Data Request #200 is no, please justify your answer and propose an acceptable alternative.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Please see response to #200 above.

202. If your response to Data Request #200 is yes, please provide a detailed mitigation plan for passive relocation of owls and appropriate mitigation measures according to the guidelines adopted by CDFG. Please provide an estimate of the acreage of suitable burrowing owl habitat that will be destroyed by Project activities and an appropriate mitigation plan according to the guidelines adopted by CDFG. If habitat is reduced to below the threshold level of 6.5 acres per relocated pair or unpaired

resident bird, please identify potentially suitable, available land that can be set aside for off-site mitigation consistent with the replacement ratios of the CDFG burrowing owl mitigation guidelines.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Please see response to #200 above.

203. Please all evidence that supports the analysis in Table 3. Your answer should include the criteria used to classify impacts as low or moderate and to exclude high impacts.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The determination of "low" or "moderate" impact is a subjective evaluation of the conditions made by the authors of the table (listed on p. T-3, previous to Table 3). The justification for determinations is provided in Table 3. For example, if the species was not observed in that location, impacts are considered low. If the species is known to occur in the area, and impacts are possible, impacts are shown as moderate.

204. Is a moderate impact significant and thus requires mitigation?

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

According to the criteria for significance as specified on page 5.5-18 of the AFC,

"Biological impacts would be considered significant if they involved the loss of sensitive plant or animal species, or degradation of their habitat. The project would have a significant impact on vegetation and wildlife if it would:

- Cause a fish or wildlife population to drop below self-sustaining levels (CEQA Guidelines, Section 15065(a))
- Threaten to eliminate a plant or animal community (CEQA Guidelines, Section 15065(a))

- Substantially affect, reduce the number, or restrict the range of an endangered, rare or threatened species of animals or plants, or the habitat of the species (CEQA Guidelines, Section 15065(a))"

Because project construction would not cause burrowing owls to drop below self sustaining levels, the impact would not be significant according to the first criterion.

As stated above, the burrowing owl is common in the region and is not listed as threatened, endangered or rare under either federal or state law or regulations. Therefore, the second and third criteria for significance are not relevant.

Notwithstanding that impacts to burrowing owls are less than significant, the Applicant understands the CEC desires to minimize impacts to this species, and is willing to implement reasonable mitigation measures to reduce potential impacts. The Applicant does so voluntarily, without regard to whether the impact is defined as significant under CEQA.

205. Do the rankings in Table 3 assume the implementation of any of the mitigation measures in Section 5.5.4? If yes, which mitigation measures are assumed?

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

As stated on page 5.5-23 of the AFC,

"With mitigation, the SSU6 Project will not have significant adverse effect on any listed species… Pre-construction burrowing owl surveys will determine the number of owls that will need to be passively relocated."

The rankings of moderate impact are based on no implementation of mitigation. With mitigation, the Applicant believes impacts are less than significant.

206. Please clarify whether any land acquisitions are proposed as habitat replacement for sensitive species other than the Yuma clapper rail and wetlands.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

No land acquisitions are proposed other than those for Yuma clapper rail and wetlands at this time.

207. If any land acquisitions are proposed as habitat replacement for sensitive species other than the Yuma clapper rail and wetlands, please identify for which species land acquisitions are planned and specify the mitigation ratios.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

As noted in Data Request Response #206 above, no such land acquisitions are proposed at this time.

208. What mitigation ratios are proposed for the Yuma clapper rail and wetland areas? Please support your answer.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Page 5.5-31 of the AFC indicates that a ratio of 2:1 is being proposed to compensation for potential project impacts to Yuma clapper rail and wetlands. This ratio was described as a typical mitigation ratios required by the USFWS and CDFG during early project consultations and is subject to confirmation with the approval and issuance of final authorizations from those agencies under Section I of the federal Endangered Species Act and Sections 2080.1 and 2081 of the California Fish and Game Code.

209. Please provide all evidence justifying the threshold of 30 individual birds observed in flyover surveys for determining where bird flight diverters will be installed.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

As noted on Page 5.5-13 of the AFC, the protocol for flyover surveys was established in 1994 by agreement between the USFWS, Ogden and CEC staff. It is assumed that the threshold value of 30 individuals was also established during those discussions. To the Applicant's knowledge, there is no approved protocol for determining thresholds for avian flyovers that should trigger implementation of avoidance measures such as bird flight diverters.

Absent an approved protocol, the Applicant has proposed 30 as the appropriate threshold. It is the responsibility of the state lead agency (CEC) to determine the standards of significance that it will apply to evaluate impacts, and in this case, it is reasonable to believe the CEC will accept the threshold that was applied during previous surveys (1994).

210. Please develop an appropriate mitigation plan, including a list of measures that will be implemented for raptors, the location where each measure will be deployed, and all evidence justifying each choice.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Transmission lines located in areas identified as highly sensitive migratory areas will be designed to comply with Avian Power Line Interaction Committee (APLIC) suggested practices. A mitigation plan will be developed as required.

211. Other projects (e.g., Sutter[12] Russell City[13]) with transmission line biological impact issues have been required to implement much more stringent mitigation than proposed for Salton Sea Unit 6. Does the applicant agree that the following mitigation measures, required for these other projects to avoid or mitigate project impacts to migratory birds, should be applied to these transmission lines?

(a) Power lines shall be constructed following recommendations in Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996, by the Avian Powerline Interaction Committee, 1996.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Please see response to No. 210.

(b) Power lines located in sensitive areas shall be fitted with bird flight diverters placed on the ground wire at 16.4-foot intervals.

Response:

[12] California Energy Commission, Sutter Power Plan Project, April 1999, pp. 161-163.
[13] California Energy Commission, Russell City Energy Center Power Plant Project, Commission Decision, September 11, 2002.

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Please see response to No. 210.

(c) Measures shall be taken in areas of high migratory bird use, particularly during the winter season, to flush birds from the construction area prior to stringing wires.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Transmission lines located in areas of high migratory bird use will be constructed under the supervision of biological monitors.

(d) Develop a monitoring plan to analyze whether the transmission line and other project facilities are causing significant impacts from avian collision and/or electrocutions. If it is determined that significant impacts are occurring, propose remedial mitigation measures to be implemented. A report presenting the monitoring data and a discussion of the mitigation effectiveness shall be provided annually for 10 years following the completion of construction. If it can be shown that impacts to birds from the project are not occurring, licensee has the option to request staff to decrease the frequency or cease monitoring.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

A monitoring plan may be developed to determine whether the transmission line facilities are causing significant impacts due to avian collision and/or electrocution. If it is determined that significant impacts to avian species are occurring, remedial mitigation measures will be reviewed for possible implementation. A report presenting the monitoring data and a discussion of the mitigation effectiveness shall be provided annually for a period of two years, beginning immediately following the completion of construction in the high bird use areas.

(e) Underbuild distribution lines wherever possible. Underbuilt lines should be spaced below conductors to provide a vertical clearance of at least 43 inches.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

IID Transmission facilities (161KV) do not allow for under build distribution or communication circuits. Compliance with State of California General Order 95 for minimum construction standards is required.

212. Please analyze the direct and indirect impacts of potential accidental operational spills of hot brine on plant and wildlife communities.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

If either the brine supply or reinjection lines rupture and spill, there may be direct or indirect adverse impacts on plant and wildlife species. High salinity brine at an elevated temperature could kill plants and wildlife.. Brine could elevate the salinity of any surface water it enters above biological tolerances of aquatic organisms and result in localized mortality. Depending on the quantity and location of the spill, brine could migrate downstream and contaminate areas away from the original spill.

Minimizing the potential for adverse direct and indirect impacts is largely a matter of minimizing the area of exposed sensitive habitat, and providing safety and redundancy features that would contain all or most of a spill, or minimize the quantity of the spill.

Of the combined four mile-length of production and injection pipelines, only about 0.25 mile crosses areas that are marsh or wetland habitat. The remaining distance crosses agricultural or road-side areas where sensitive receptors (such as natural habitat and endangered species) are largely absent. Therefore, only a spill in the relatively small area of sensitive receptors would be considered to have a potentially significant adverse effect on wildlife.

With respect to safety and isolation, the pipeline is designed as a double-pipeline, encased in concrete, isolated by block valves at the well head and along the pipeline, and monitored both externally by daily visual inspections, and internally by pressure monitors. Page 3-8 of the AFC describes the safety features of the production wells as follows:

"Three aboveground production pipeline rights-of-way (ROWs) totaling approximately 1 mile long will connect the production wells to the plant site (see Figure 3.1-4)…The twin alloy pipelines from the wellhead each have isolation valves on both sides of an emergency shutoff valve. They each feed into a single pipeline header equipped with a header isolation valve. Each production well is instrumented with pressure and temperature sensors

remotely monitored in the operator control room. Each well flows through the header isolation valve to a cement-lined carbon steel pipeline from the production island to one of two collection manifolds at the central brine handling facility."

Page 3-11 of the AFC describes the safety features of the reinjection wells as follows:

"Three aboveground injection pipeline ROWs totaling approximately 3 miles long will connect the plant site to the injection wells (see Figure 3.1-4…The aboveground injection distribution pipelines will be constructed of cement-lined carbon steel."

In the event of a leak in the inner pipeline, the outer pipeline would capture the flow and convey it back to the plant, where it discharges into a brine pond.

The potential direct and indirect impacts of an operational spill of hot brine is a function of the potential size and frequency of a spill and the sensitivity of the receptors. In this case, the project has implemented measures to reduce the potential for a spill by designing double walled pipes with a recovery system, monitoring both internally and externally the function of the pipelines, and by minimizing the potentially sensitive area that would be crossed by the pipeline. Implementation of these mitigation measures reduces the potential for adverse direct or indirect impacts from an operational spill to less than significant.

213. Please explain how the decision is made to remove water from the ponds, e.g., automatic level sensors that trigger a pump, employee observation, and manual activation of pump/injection well. Please support your answer with a piping and instrumentation diagram ("P&ID") and an operations plan for pond evacuation.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The decision to remove water from the brine ponds is controlled by the operator, with operating philosophy to maintain the lowest practically possible level in the pond at all time. P&ID's are subject to final design. (Personal conversation, CalEnergy, 2002).

214. Based on the existing brine ponds, please provide the following information and all evidence to support your answers:

(a) How frequently, e.g., percent of year, is standing water present in the ponds?

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Please refer to response to CEC Data Request #83.

(b) For each waste stream, what is the average amount of time water is present in the ponds after a release?

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Please refer to Response to CURE Data Request #213.

(c) What is the annual average depth of water in the ponds?

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

For the proposed Salton Sea Unit 6, it is anticipated that the average annual depth of liquid in the pond will be from one to two feet. (Personal conversation, CalEnergy, 2002)

(d) What is the sludge accumulation rate in the ponds in inches per year?

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Please refer to CURE Data Request #214 (e)

(e) How frequently is sludge removed from the ponds?

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The solid material or sludge will be removed on an "as needed" basis to ensure efficient operation of injection wells and pumps and to allow sufficient capacity for fluid flow in the event of a plant trip.

215. Have any surveys been conducted of wildlife use of the existing brine ponds? If yes, please provide copies of all such surveys.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

No formal surveys have been conducted of wildlife use of existing brine ponds. No wildlife has been observed in brine ponds.

216. Please provide all references, surveys, and other information that support your claims that the ponds do not pose a significant ecological risk to wildlife and specifically, support your following claims:

(a) There is no risk due to the availability of other water sources.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

1. Based on observations and professional opinion, the AFC did not provide references or surveys to substantiate that wildlife do not use existing brine ponds. The Applicant believed this was established by the following specific evidence. The water in brine ponds generally exceeds 215,000 TDS (drinking water rarely exceeds 500 TDS) and would be considered extremely salty by any organism that attempted to drink it. Given a choice of waters of various quality, it is likely that birds and small mammals would choose to drink less saline water, as described in (2) below.

2. The high salinity and site maintenance procedures prevent any vegetation community from growing in or around the ponds. Wildlife generally look for water, food and cover if available. The brine ponds, lacking vegetation and located proximate to large industrial structures and towers, are unlikely to be as attractive a source of water as the Salton Sea, various irrigation laterals and drainage canals. In the project area, alternate water sources such as laterals, canals and the Salton Sea with food and cover, in addition to water, are all available within 0.25 mile of the project site.

3. Observations of brine ponds indicate that they do not exhibit algal growth. While insects are potentially more salt tolerant than vertebrates, they also have salt tolerances that are probably exceeded by the brine ponds.

4. The temperature of brine, when discharged to these ponds, could be in excess of 180 degrees, which is generally considered lethal for most organisms. Periodic flushing with high-temperature water would essentially kill any algae, seeds or aquatic larvae that could attract wildlife.

Because the quality of water in the brine ponds is poor, supports no vegetation and probably supports no prey species, it is unlikely that birds or small mammals would choose to rest, drink or feed there to any substantial degree so long as alternate water (and food) sources exist. Abundant water, marshland, food and cover exist directly north and west of the project (Sonny Bono Salton Sea National Wildlife Refuge Complex) where birds and wildlife are likely to concentrate their activities.

(b) There is no risk due to desert adaptations to conserve water.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Please see the Response to (a).

(c) There is no risk because desert species will not preferentially utilize the briny water sources.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Please see the Response to (a).

(d) There is no risk because the brine will cause taste aversion and involuntary rejection.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Please see the Response to (a).

217. The ponds will receive runoff from bermed areas around plant equipment. Thus, they may contain oils and greases which could coat bird feathers. Please estimate the amount of oil and grease that may be present in brine pond discharges.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

All water collected in process areas of the project site containing oil, lubricants, and petroleum products will be directed to an oil/water separator, as discussed in Section 3.3.5.7 of the AFC. Therefore, the Applicant does not anticipated that the brine pond will contain detectable quantities of oils and greases.

218. Please provide a detailed assessment of the impacts of brine pond contents (including all waste streams) on wildlife, with a particular focus on birds and accumulation in the food chain.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

As noted above, the Applicant does not believe that wildlife will use the brine ponds, as there will be no prey or cover in the ponds to attract them, and the salinity will be higher than surrounding waters. Because wildlife will not drink or eat from the brine ponds, the Applicant believes there will be no accumulation of pond contents in the food chain.

219. Please provide an assessment of the impact of dietary uptake of water from brine ponds and accumulation of contaminants in insects to local bat species.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

As noted above, the Applicant believes that there would be no dietary uptake from the brine ponds, as insects would be unlikely to survive and reproduce in the brine. Therefore, uptake by bats is unlikely to occur from the project.

220. Is the applicant willing to accept mitigation measures to lessen the impacts from ponds on wildlife, including redesign of the ponds to make them less attractive to wildlife, use of screen covers, and hazing? If no, please justify your answer.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The Applicant does not believe that wildlife will be attracted to the ponds, because of the high salinity, lack of cover and food, proximity of other sources of water and presence of industrial activity. The Applicant does not believe additional mitigation is necessary to ensure impacts are less than significant.

221. The brine contains elevated concentrations of fluorine (AFC, Table 3.3-1), but the emission inventory does not include fluorine. (AFC, Appendix G.) Please estimate fluorine emissions from all Project emission sources and support your answer with engineering calculations and a fluorine material balance that shows all fluorine sinks.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The fluorine in the brine is chemically a fluoride. The emissions of fluoride from SSU6 are less than the values listed values (below second digit of significance):

Cooling Tower	0.00.. lbs/hr
Dilution Water Heaters	0.00.. lbs/hr
Silica Filter Cake	0.00.. lbs/hr
Sulfur Filter Cake	0.00.. lbs/hr

Refer to CEC Data Response 54 for additional information on the emissions.

With respect to a fluoride material balance, almost all the fluoride in the brine flowing to the facility is reinjected back to the geothermal reservoir.

222. The brine contains elevated concentrations of boric acid (AFC, Table 3.3-1), some of which is emitted from the cooling towers. The boron emissions from the cooling towers in Table G-7 are not proportional to the TDS emissions as they should be, e.g., 4500 ppm/235,000 ppm does not equal 0.266 ppm/315 ppm. Thus, please support the boron concentration of 0.266 ppm in the cooling tower circulating water and the cooling tower emission rate of 9.02×10-4 ton/yr in Table G-7 with an engineering calculation and a boron material balance that shows all boron sinks.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The boric acid concentration in the cooling tower drift is not directly proportional to the TDS concentrations. Refer to CEC Data Response 54 for additional information on the emissions.

With respect to a boron material balance, almost all the boron in the brine flowing to the facility is reinjected back to the geothermal reservoir.

223. Please provide all evidence that crops will not be present immediately south and east of the facility, over the operational life of the facility.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Crops are expected to be present immediately south and east of the proposed facility.

224. Please provide all evidence that drift from the towers will not contaminate the water pond between the two towers (AFC, Fig. 3.3-1B).

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The impact of drift on the water pond is expected to be negligible as the following example shows:

PM10 emissions from the cooling tower is .44 grams/sec. Table G-7
PM10 annual maximum drift impact is 0.143 ug/m3. Table G-23 (assumed impact on pond).
PM10 deposition rate 0.02 m/sec. Hot Spots HRA Guide default
Deposition on Pond per day. 0.02*0.143*86,400= 247.1 ug/m2-day
Area of Pond 136,354 ft2 * 0.0929m2/ft2 = 12,668 m2 CURE DR 2
Pond volume 606,798 ft3 * 7.48 gal/ft3 = 4,538,849 gallons CURE DR 2
Pond volume 606,798 ft3 * 28.32 kg/ft3 = 17,184,519 kg
Pond water demand 293 afy AFC page 5.4-8, 293 afy * 325,851 gal/af = 95,474,343 gallons/year
Volume Changes 21 changes per year = 95.47/4.54
Conc in Pond = Dep * area * days/year / (volume * changes)

Conc in Pond = 247.1 * 12,668 * 365 / (17,184,519 * 21)
Conc in Pond = 3.2 ppm of TDS @0.006 % drift
Conc in Pond = 2.7 ppm of TDS @0.005 % drift

225. Very large amounts of NH3 will be emitted from the towers, most of which is attributed to off-gassing, followed by noncondensible gases. (AFC, Table G-8.) Since NH3 is very soluble in water, presumably some of the noncondensible gaseous ammonia and off-gassing NH3 will dissolve in the drift and be deposited downwind of the tower.

(a) Please estimate the equilibrium distribution of NH3 between the dissolved and gaseous state in cooling tower emissions. Support your answer with calculations, references and all other relevant information.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Although it appears that there is a significant ammonia emission (712 lb/hr) from the cooling tower, it is accompanied by over 130,000,000 lb/hr of air flow. This extremely weak ammonia concentration (5.5 wppm) means that the equilibrium concentration in the drift will also be low (4.8 wppm). Since the amount of drift is low (774 lb/hr) the amount of ammonia carried in the drift is miniscule (.0037 lb/hr). The actual amount will be even less since the arid environment will cause most or all of the drift to evaporate before it settles to the ground. Refer to attached calculations.

Ammonia Emmission =		712.127	lb/hr
Ammonia Emmission =		41.815	lb-mole/hr
	Air Emmission =	130,636,117	lb/hr
	Air Emmission =	4,528,115	lb-mole/hr
Ammonia Concentration =		5.45	wppm
Ammonia Vapor Mole Fraction, y =		9.2345E-06	
Equilibrium Constant, K =		1.8275	
Ammonia Liquid Mole Fraction, x =		5.0530E-06	
	Cooling Tower Drift =	774	lb/hr
	Cooling Tower Drift =	42.964	lb-mole/hr
	Ammonia in Drift =	2.1710E-04	lb-mole/hr
	Ammonia in Drift =	0.0037	lb/hr
	Ammonia in Drift =	4.78	wppm
Percent Ammonia Emission in Drift =		0.00052%	

(b) Please prepare a deposition analysis for NH3 which considers its distribution between gaseous and dissolved states. Support your answer with model input and output files.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The impact of drift ammonia due to deposition is expected to be negligible as the following example shows:

PM10 emissions from the cooling tower is 0.44 grams/sec. Table G-7
@0.006% drift
PM10 annual maximum drift impact is 0.143 ug/m3. Table G-23
Ammonia emissions due to drift is 0.0037 lbs/hr or 4.67E-4 grams/sec.
Please see (a) above
Ammonia annual maximum drift impact is 1.52E-4 ug/m3.
((0.143/0.44)*4.67E-4)
Drift deposition rate 0.02 m/sec. Hot Spots HRA Guide default
Deposition per day. 0.02*1.52E-4*86,400= 0.262 ug/m2-day.
Deposition per year. 0.262 ug/m2-day * 365 days/year * 10,000 m2/ha * E-9 kg/ug .

Deposition per year. 9.56E-4 kg/ha-year. @0.006% drift
Deposition per year. 7.97E-4 kg/ha-year. @0.005% drift

226. Please provide an analysis of the impacts of fertilization on local plant communities as well as plant and wildlife toxicity effects due to deposition of pollutants associated with cooling tower drift emissions.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Page 5.5-19 of the AFC describes the estimated emissions from the project. Estimates of annual nitrogen dioxide and NOx are approximately 200 ug/m3. By comparison, moderate application rates of nitrogen fertilizers at around 20 lbs/ acre are equivalent to about 2200 ug/ m3. The fertilizing effect of nitrogen from the project would be undetectable in the agricultural context of the area.

Pages 5.5-19 and 20 list the potentially toxic constituents of project emissions (PM10, NOx, SO2, etc) and compare them to sensitive biological receptors. These criteria have been used as benchmarks by the CEC in previous projects to indicate where potential adverse effects could occur. As provided in the analysis on 5.5-19 to 20, the impacts are considered less than significant.

227. Please provide an analysis of potential Project impacts on other sensitive species listed in Table 5.5-1C (p. 5.5-42) not previously presented in the AFC.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The species in Table 5.5-1C that were not addressed in the body of the AFC are represented in Table 5.5-1CR (below) with a new column summarizing the use of the project area by the species and rationale for determining no significant impact.

Table 5.5-1CR. POTENTIAL IMPACTS TO SENSITIVE SPECIES SALTON SEA UNIT 6 STUDY AREA

Common Name	Federal Status	State Status	Impact Analysis
American white pelican	None	Species of Special Concern	Species is migratory and uses the area for winter feeding (fish). Project would not affect fish in the Salton Sea.
Brown pelican	Endangered	Endangered	Species is migratory and uses the area for winter feeding (fish), and occasionally nesting. Project

Table 5.5-1CR. POTENTIAL IMPACTS TO SENSITIVE SPECIES SALTON SEA UNIT 6 STUDY AREA			
Common Name	**Federal Status**	**State Status**	**Impact Analysis**
			would not affect fish in the Salton Sea or remove potential nesting habitat.
Double-crested cormorant	None	Species of Special Concern	Species is resident and migratory, using the Salton Sea primarily for feeding on fish. Project would not affect fish in the Salton Sea.
Least bittern	None	Species of Special Concern	Species is resident and migratory, using the Salton Sea primarily for feeding on fish in marsh. Project would avoid impacts to marsh habitat (see analysis for clapper rail).
White-faced ibis	None	Species of Special Concern	Species is resident and migratory, feeding in agricultural fields of Imperial Valley. Project would not significantly reduce available foraging habitat.
Cooper's hawk	None	Species of Special Concern	Occurs primarily as winter migrant, foraging on small birds in agricultural fields. No suitable nesting habitat in project area. Project would not significantly reduce available foraging habitat.
Sharp-shinned hawk	None	Species of Special Concern	Occurs primarily as winter migrant, foraging on small birds in agricultural fields. No suitable nesting habitat in project area. Project would not significantly reduce available foraging habitat.
Prairie falcon	None	Species of Special Concern	Occurs as winter migrant and resident, foraging on small birds and waterfowl. No suitable nesting habitat in project area. Project would not significantly reduce available foraging habitat.
Northern harrier	None	Species of Special Concern	Occurs as winter migrant, foraging on small birds in agricultural fields. No suitable nesting habitat in project area. Project would not significantly reduce available foraging habitat.
Ferruginous hawk	None	Species of Special Concern	Occurs as winter migrant, foraging on rabbits, squirrels and small rodents in agricultural fields. No suitable nesting habitat in project area. Project would not significantly reduce available foraging habitat.
Merlin	None	Species of Special Concern	Occurs as winter migrant, foraging on small waterbirds. No suitable nesting habitat in project area. Project would not significantly reduce available foraging habitat.
Osprey	None	Species of Special Concern	Species is migratory and uses the area for winter feeding (fish). Project would not affect fish in the Salton Sea.
Mountain plover	Proposed Threatened	Species of Special Concern	Not observed in project area.
Long-billed curlew	None	Species of Special Concern	Occurs as winter migrant, foraging on small insects and crustacea in agricultural fields and wetlands. Project would not significantly reduce available foraging habitat.
Black tern	None	Species of Special Concern	Occurs as summer migrant. Eats insects and small fish or tadpoles. Needs fresh water while breeding. Sensitive to shoreline development in nesting areas. Project would not develop potential nesting

Table 5.5-1CR. POTENTIAL IMPACTS TO SENSITIVE SPECIES SALTON SEA UNIT 6 STUDY AREA			
Common Name	**Federal Status**	**State Status**	**Impact Analysis**
			areas.
California gull	None	Species of Special Concern	Occurs as winter migrant and summer resident, feeding on garbage, carrion, earthworms and similar. Generally nests on islands or shorelines of salt ponds. Project would not develop potential nesting areas.
Laughing gull	None	Species of Special Concern	Summer migrant and sometimes breeds at Salton Sea. Feeds on small fishes and crustacea. Project would not develop potential nesting or feeding areas.
Black skimmer	None	Species of Special Concern	Summer migrant, feeds on small fishes in Salton Sea. Nests on gravel bars, low islets and sandy beaches. Project would not develop potential nesting areas.
Caspian tern	None	Species of Special Concern	Occurs as summer migrant. Eats small fish from Salton Sea. Sensitive to shoreline development in nesting areas. Project would not develop potential nesting areas.
Elegant tern	None	Species of Special Concern	Occurs as summer migrant. Eats small fish from Salton Sea. Sensitive to shoreline development in nesting areas. Project would not develop potential nesting areas.
Van Rossem's gull-billed tern	None	Species of Special Concern	Summer migrant at Salton sea, but breeding range includes Gulf of California, Gulf of Mexico and Atlantic coast. Nests on sandy flats in shells and debris. Project would not develop potential nesting areas.
Loggerhead shrike	None	Species of Special Concern	Resident in project area. Feeds on insects and small mammals. Nests in dense shrub or tree. Habitat is sparse in project region, and does not occur on project site.
Horned lark	None	Species of Special Concern	Resident in project area. Eats mostly insects, and grass. Nests in open grasslands with low sparse vegetation. Unlikely to be present in developed agricultural areas.
Yellow warbler	None	Species of Special Concern	Winter migrant in project area, feeding in riparian vegetation and landscape trees. Project would not convert significant riparian habitat.
Yellow-breasted chat	None	Species of Special Concern	Winter migrant in project area, feeding in riparian vegetation and landscape trees. Project would not convert significant riparian habitat.
LeConte's Thrasher	None	Species of Special Concern	Resident in project area. Lives in desert shrubs and cactus, and feeds on insects and small vertebrates. Suitable habitat may occur along transmission line corridor, but is not present at project site.

228. Please provide an assessment of noise-related impacts on wildlife. Please identify and justify significance thresholds and support all analyses with literature references, studies, and all other information that supports your conclusions.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Page 5.5-18 of the AFC states:

"The threshold for noise impacts is 60 dBA Leq hourly within habitat occupied by listed bird species."

This threshold has been used and validated by the CEC staff, after consultation with the USFWS on previous CEC projects. (Buford,D. 2001. USFWS. Personal communication with Stuart Itoga, Rick York, and Kae Lewis, August 20, 2001. in Russell City Energy Center FSA 2002)

Page 5.5-22 analyzes the potential impact of noise on the most sensitive identified receptor as follows:

"Yuma clapper rails within 890 feet of Production Well Pads OB1, OB2, and OB3 would be potentially exposed to sound levels that exceed 60 dBA Leq. "

(For reference, 60 dBA is described as "data processing center, normal conversation at 5 feet, air conditioning unit at 100 ft…" 70 dBA is described as "busy traffic, hair dryer, moderately loud…"80 dBA is "Freeway at 100 ft, pneumatic drill at 50 feet, noisy restaurant..").

229. Please prepare a project-specific construction noise assessment of the impacts on the Yuma clapper rail.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Page 5.5-23 of the AFC states:

"Potentially significant noise impacts may occur in Yuma clapper rail habitat during construction of the plant. A detailed noise study will be conducted prior to construction of the facility to identify the noise reduction requirements to reduce noise levels to 60 dBA Leq or below in Yuma clapper rail habitat."

Page 5.5-29 of the AFC states that the detailed assessment and mitigation will be prepared during final design.

"Bio-10: Construction Noise Abatement. A detailed project-specific construction noise assessment will be conducted during final design to determine the most practicable measures to reduce/mitigate construction noise impacts."

230. Please identify mitigation measures to minimize construction noise impacts identified in the prior Data Request.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Any potential mitigation measures necessary to reduce construction noise impact to below levels of significant would be identified in the construction noise assessment identified in Section 5.5.5 of the AFC.

231. The AFC states that the steam blow process will be scheduled to coincide with the non-breeding season of the Yuma clapper rail only "if feasible." If not feasible, please identify measures to reduce the noise impacts of steam blows to a less than significant level.

(a) How many steam blows will occur over the life of the Project?

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Three steam blows (2 x HP, 2 x SP and 2x LP lines) are contemplated during the commissioning period, subject to final design. Noise abatement will consist of the installation of a vent silencer during steam blow. The model currently envisioned (Fluid Kinetics Model BOS 94-94-2754) is one designed to provide sound levels not to exceed 60 dBA at 650 ft. from the silencer outlet. A sketch of this silencer is provided as Attachment CDR-231.

(b) What is the duration of a typical steam blow?

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

A typical steam blow could last from one day to one week.

232. Measure Bio-10 limits construction to the non-breeding season only if pre-construction surveys identify clapper rails in any area where noise levels will exceed 60 dBA. Would the applicant be willing to modify this condition to limit construction to the non-breeding season in any area where clapper rails have been identified in any survey conducted over the past 5 years? If no, please justify your answer.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The project-specific construction noise assessment referenced above (CDR-229) will address the exact locations where construction limits are appropriate. The Applicant expects to develop this after consultation and review with the USFWS, CDFG and CEC. If at that time it appears that clapper railbreeding and nesting locations cannot be adequately determined during the year of construction, and CDFG recommends that the plan consider areas where clapper rails have been detected in the last 5 years, the suggested modification may be considered.

233. Please identify the daily range of all sensitive species identified in Table 5.5-1C (p. 5.5-42) and support those ranges with literature references. Please provide additional surveys for all species whose daily range extends beyond the previously surveyed 200-foot buffer zone.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The background for the question inaccurately portrays the methodology and use of Table 5.5-1C. Page 5.5-7 of the AFC states:

"Refer to Table 5.5-1C for all detected and potentially occurring sensitive animal species within the study area."

The species listed in Table 5.5-1C were not limited to those species that were observed in a 200-foot buffer zone, but rather included all sensitive species that were provided through consultation and lists from USFWS, and CDFG (e.g. CNDDB). This comprehensive approach is intended to consider impacts to species that were not observed, but considered to potentially occur.

234. Please reconcile the estimated area of disturbance/habitat impact by the project component in acres in Table 5.5.-1D, Table 3.2-2, and Table 5 in Appendix K.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Refer to the Applicant's response to CEC Data Request Set 1 #28 (filed on December 2, 2002).

235. Please provide a table indicating the listing status of all species and critical habitat in the vicinity of the Salton Sea Unit 6 project under the federal ESA and the California ESA.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

Table 5.5-1C, on page 5.5-42 of the AFC lists the status of sensitive species found in the project area.

Critical Habitat is designated for the following species:

Southwestern Willow Flycatcher: (Federal Register Vol 62. No. 140, July 22, 1997)

Desert Pupfish: (Federal Register Vol 51, No. 61, March 31, 1986.)

Critical habitat for these species does not occur in the project area.

236. Please provide a schedule for your development of a Habitat Conservation Plan to enable the incidental take of species on state, county and private property.

Response:

Subject to the above-referenced General Objections and Qualifications, and without waiving the same, Applicant responds:

The USFWS has not indicated a need for an incidental take permit or preparation of a Habitat Conservation Plan at this time.

Attachment
CDR-121

CalEnergy Operating Company
950 W. Lindsey Rd.
Calipatria, CA 92233
Phone: (760)348-4000

1. Geothermal Scale

2. Composition (Average concentration)

Major Elements	Probable Compounds	(Percent)
Silicon (Amorphous)	(SiO2+Silicates)	50
Iron	(Fe3O4+Fe2O3+FeSiO4+Fe+FeCO3)	18
Copper	(Cu+CuCl2+CuS)	10
Sodium	(NaCl)	5
Calcium	(CaSO4+CaCO3)	3
Potassium	(KCL)	3

Minor Elements	Probable Compounds	(PPM)
Aluminum	(Silicate)	10,000
Manganese	(MnS+MnSO4)	10,000
Strontium	(SrSO4)	10,000
Magnesium	(MgCO3)	7,500
Arsenic	(As+FeAs2)	30,000
Barium	(BaSO4)	5,000
Bismuth	(Bi2S3)	1,500
Lead	(PbS)	1,000
Antimony	(Sb+SbS)	1,000

Trace Elements	Probable Compounds	(PPM)
Silver	(Ag+AgS)	750
Cadmium	(Cd+CdS)	500
Chromium	(Cr2(SO4)3)	500
Cobalt	(CoS2)	500
Zinc	(ZnS)	400
Beryllium	(Be)	100
Gold	(Au)	2
Radium 226	(RaSO4)	60 pCi/g
Radium 228	(RaSO4)	45 pCi/g
Other Metals		<100

3. Chemical and Physical Properties

Appearance: Scale is a very heterogenous substance, composition will vary. Color ranges from light brown to black with greenish areas.

Density: Average - 2300 lbs./cubic yard

Solubility in water: Insoluble in water

Odor: None have been noticed

4. Fire and Explosion Hazard Data

No hazard due to fire or explosion expected.

5. Reactivity Data

Stability: Material is stable under ordinary conditions
Incompatibility: No incompatibilities have been noticed.
Hazardous Decomposition Products: At very high temperatures the materials may emit sulfur oxide gases and metal fumes
Hazardous Polymerization: No polymerization will occur.

6. Exposure Guideline

A review of exposure guidelines for all the components of scale was performed. Atmospheric levels should be maintained below the following exposure standards:

Arsenic: OSHA PEL: TWA 0.01mg(As)/M3

Beryllium: OSHA PEL: TWA 0.002mg(Cd)/M3

Cadmium: OSHA PEL: TWA 0.2mg(Cd)/M3
OSHA is also proposing new limits for Cadmium (FR, Vol 55, No 25, Feb. 6, 1990, Page 4052)

OSHA PEL: TWA 5ug(Cd)/M3 or
1ug(Cd)/M3

Lead: OSHA PEL: TWA 0.05MG(Pb)/M3

Radium: California Department of Health Services (CDOHS) has set air concentration standards, maximum permissible concentrations (MPC), for Radium (Ra) 226 at 5E-11 uCi/ml or air. A significant daughter product of the RA 226 decay chain is Lead 210 which has a MPC value of 1E-10 uCi/ml of air.

In the Ra 228 decay chain the CDOHS has set the MPC for Ra 228 at 4E-11 uCi/ml of air. A significant daughter product of the Ra 228 decay chain is Thorium 228 which has a MPC value of 6E-12 uCi/ml of air.

MPC values in the air are based on internal doses due to inhalation. In addition, the Department of Energy has established external dose limits as follows:

	Rems per Calendar Year
Whole Body	5.0

7. Handling Precautions and Protective Equipment

These recommended precautions are intended for use during normal operating conditions. Emergency/upset conditions could require additional precautions. (For an explanation of the low, moderate and high potential exposure categories or specific recommendations for your specific operation, contact the Safety Department.)

Eye

Low - Use Safety glasses
Moderate/High - Use chemical goggles

Skin

Low - No precautions other than clean body covering clothing;
Moderate/High - Use boots and gloves

Inhalation

Low/Moderate/High - Atmospheric levels should be maintained below the exposure guidelines. Use respiratory protection when in scale handling operations and areas. Clean or dust clothing, boots and gloves before leaving work area.

Ingestion

Use good personal hygiene. Do not consume or store food and drink in the work area. Wash hands before smoking or eating. Clean body covering clothing, boots and gloves after handling.

Ventilation

Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.

Protective Equipment Information

There is no respirator test data available for this material. Data for related materials indicate that the following should be effective types of air-purifying respirators: dusts and radionuclides.

8. Emergency Treatment and Medical Notes

Eye

Irrigate immediately with water for at least 15 minutes.

Skin

Wash off in flowing water or shower

Ingestion

Refer to Physician

Inhalation

Refer to Physician

9. Potential Health Effects

This section includes possible adverse effects which could occur if this material is not handled in the recommended manner.

Eye

May cause moderate eye irritation

Skin

May cause moderate skin irritation

Ingestion

May cause toxic effects

Acute Inhalation

Vapors are unlikely due to physical properties. Excessive exposure may cause irritation of the eyes, upper respiratory tract and lungs.

Chronic Effects/Carcinogenicity

The following components of scale are known to the State of California to cause cancer: Arsenic, Cadmium, Beryllium and Radium (decay chain).

Teratogenic Effects

There are some positive animal teratogenic tests for several of the components of scale.

Reproductive Effects

Lead is known to the State of California to cause reproductive toxicity.

Mutagenicity

There are some positive mutagenicity tests for several of the components of scale.

10. Environmental and Disposal Information

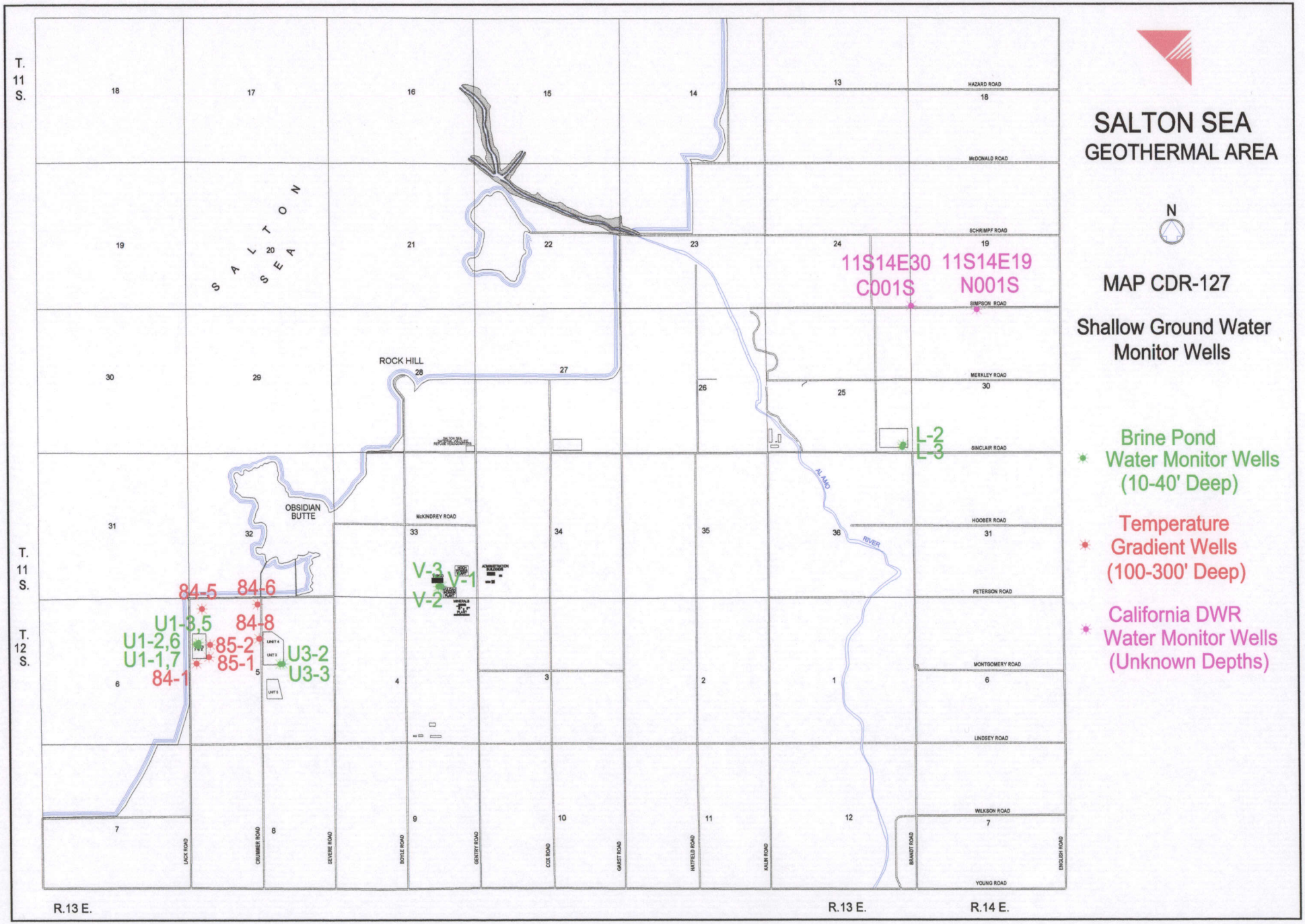
Action to take for releases:

Reclaim all the material which was released. For any Scale releases refer to the CalEnergy Operating Co. Business Plan for local agency notification. If more than 200 lbs. of scale (fine particles) have been released to the environment, then EPA also has to be notified within 24 hours at 1-800-424-8802 (The National Response Center).

Disposal Method:

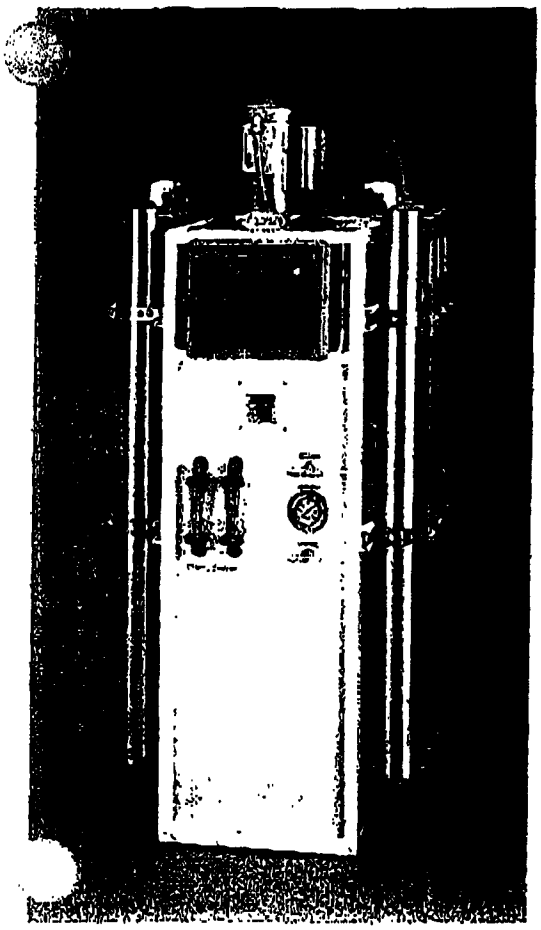
Scale should not be disposed of, but reclaimed and stored in a safe and proper manner. If scale needs to be disposed of, contact CalEnergy Operating Company's Environmental Manager.

Attachment
CDR-127

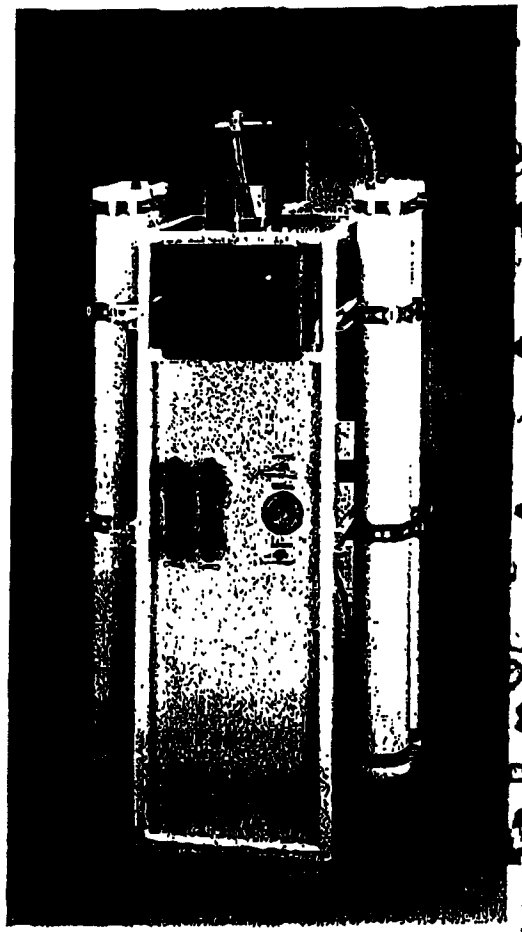

SALTON SEA
GEOTHERMAL AREA
N
MAP CDR-127
Shallow Ground Water
Monitor Wells
Brine Pond
Water Monitor Wells
(10-40' Deep)
Temperature
Gradient Wells
(100-300' Deep)
California DWR
Water Monitor Wells
(Unknown Depths)
11S14E30
C001S
11S14E19
N001S
L-2
L-3
V-1
V-2
V-3
84-5
84-6
84-8
85-2
85-1
84-1
U1-3,5
U1-2,6
U1-1,7
U3-2
U3-3
ROCK HILL
OBSIDIAN
BUTTE
SALTON
SEA
ALAMO
RIVER
T.
11
S.
T.
12
S.
R.13 E.
R.13 E.
R.14 E.
HAZARD ROAD
McDONALD ROAD
SCHRIMPF ROAD
SIMPSON ROAD
MERKLEY ROAD
SINCLAIR ROAD
HOOBER ROAD
PETERSON ROAD
MONTGOMERY ROAD
LINDSEY ROAD
WILKSON ROAD
YOUNG ROAD
McKINDREY ROAD
LACK ROAD
CRUMMER ROAD
SEVERE ROAD
BOYLE ROAD
GENTRY ROAD
COE ROAD
GARST ROAD
HATFIELD ROAD
KALIN ROAD
BRANDT ROAD
ENGLISH ROAD

Attachment
CDR-156

Commercial Reverse Osmosis Equipment
Model: Frame Mount Vertical



Typical Model with Options



Typical Standard Model

- Floor standing model with durable powder-coated frame
- Designed for municipal/tap water source, operating system pressure at 200 psi
- Quality components utilized for system construction
- Dependable electro-mechanical relay logic control circuit
- Dual-level tank switches and controls
- Plumbed for optimum water recovery
- 12-month (one year) factory warranty

Output Production: 800 gpd up to 10,800 gpd

FRAME MOUNT VERTICAL
GPD: 800 - 10,800

STANDARD FEATURES:

- Powder-coated steel frame
- High-pressure pump ➡ NOW STAINLESS STEEL
- Thin film composite membrane
- PVC membrane housing
- High-pressure nylon tubing
- Liquid-filled high pressure gauge
- Liquid-tight wire shrouding
- Feedwater inlet solenoid valve
- Adjstbl. waste & recycle needle valves
- Product & waste flow meters
- 5 micron pre-filter
- Inlet and outlet pre-filter gauges
- High-pressure brass comp. fittings
- Salt rejection 95 - 99%

OPTIONS:

- ☐ Stainless steel membrane housings
- ☐ Stainless steel pump
- ☐ Automatic hourly flush
- ☐ Manual flush
- ☐ TDS monitor (digital or analog)
- ☐ Hour meter
- ☐ Recycle flowmeter
- ☐ Tank pre-cure switch (product)
- ☐ Product diverstor
- ☐ IEC contactor with overload
- ☐ Stainless steel needle valves
- ☐ High pressure cut-off with auto restart and manual override
- ☐ Pre-treat feed pump with tank
- ☐ 50 hz electrical requirement
- ☐ Shipping crate
- ☐ Other options available upon request

STANDARD ELECTRICAL CONTROLS :

- NEMA 4 fiberglass enclosure
- Off/On switch
- Dual level float switches
- Low pressure switch
- Low pressure bypass delay
- Fused control circuit
- 24 volt level control circuit
- Time delay start
- 30 amp motor contactor

Lights: power, running, low pressure, tank full

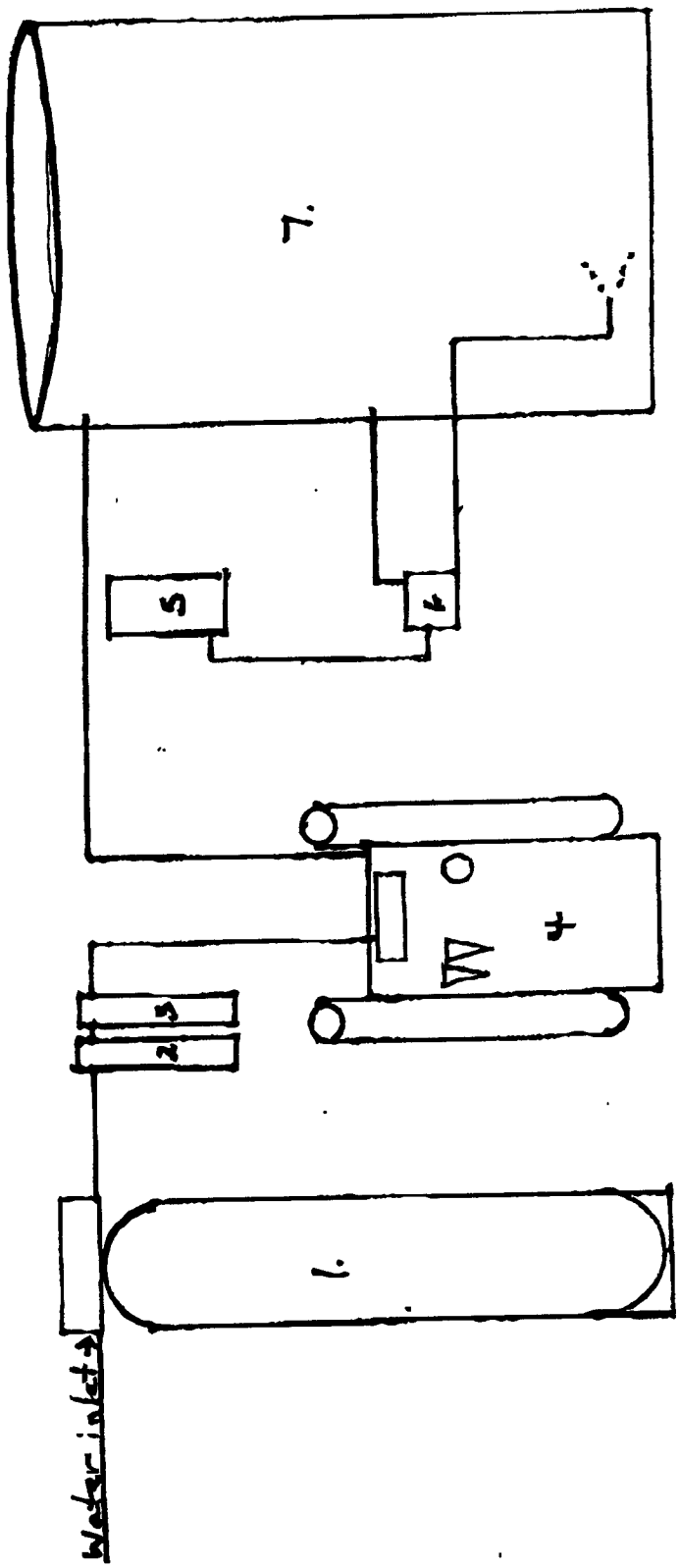
FEED WATER PARAMETERS:

♦Temperature 85° F maximum ♦Pressure 40 - 80 psi maximum ♦TDS 2000 ppm maximum. If higher, consult factory ♦Iron tolerance 0.5 ppm maximum ♦Hydrogen sulfide must be removed ♦Silica tolerance can not be higher than 125 ppm in the concentrate stream. Antiscalant should be considered for any levels over 75 ppm. ♦Turbidity should be removed ♦Hardness must be removed.

OPERATING PARAMETERS:

♦Operating pressure 200 psi maximum ♦Water recovery up to 60% and is field adjusted by customer. It is not recommended that the recovery be set higher than 50%. Only under certain conditions can the recovery be set higher. ♦pH range 3 - 11 ♦Flow rates are determined by the membrane mfgr's. testing criteriea of 1500 ppm Nacl solution, 77°F water temperature, 225 psi at 10-15% recovery. Actual flow rates may vary depending on the pre-treatment used, water conditions, system size, membrane array and applied pressure.

MODEL	GPD	MEMBRANE	MOTOR	PUMP	PIPING inlet	waste	prod	DIMENSIONS
FMV-800	800	4" x 21" 1ea.	1/2 HP	rotary vane	1/2"	1/2"	1/2"	24" x 29" x 49"H
FMV-1	1,500 - 1,800	4" x 40" 1ea.	1 HP	multi-stage	3/4"	1/2"	1/2"	24" x 29" x 57"H
FMV-2	3,000 - 3,600	4" x 40" 2ea.	2 HP	multi-stage	1"	1/2"	1/2"	24" x 29" x 57"H
FMV-3	4,500 - 5,400	4" x 40" 3ea.	2 HP	multi-stage	1"	1/2"	1/2"	29" x 29" x 61"H
FMV-4	6,000 - 7,200	4" x 40" 4ea.	3 HP	multi-stage	1"	1/2"	1/2"	29" x 29" x 61"H
FMV-5	7,500 - 9,000	4" x 40" 5ea.	3 HP	multi-stage	1"	1/2"	1/2"	29" x 29" x 61"H
FMV-6	9,000 -10,800	4" x 40" 6ea.	3 HP	multi-stage	1"	1/2"	1/2"	29" x 29" x 61"H



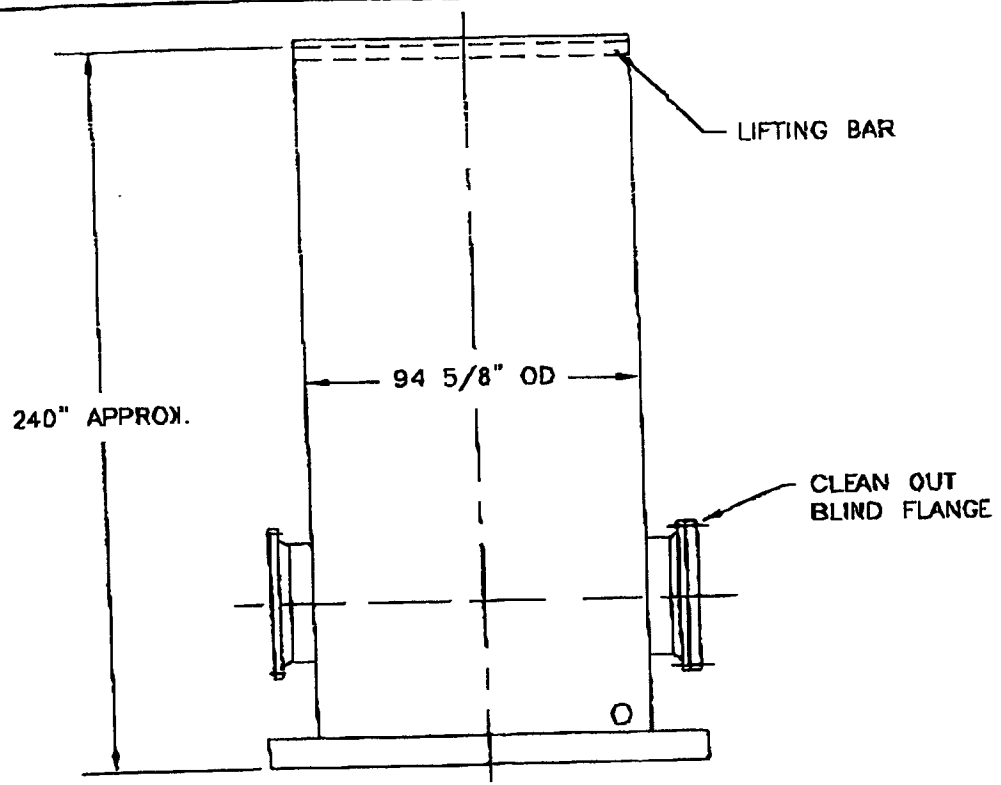
1. Equipment Enclosure
2. 25 Micron Filter
3. 5 Micron Filter
4. 5 GPM R.O. System
5. Ozone Generator
6. Circulation Pump
7. 5000 Gal. Storage Tank

Attachment
CDR-157

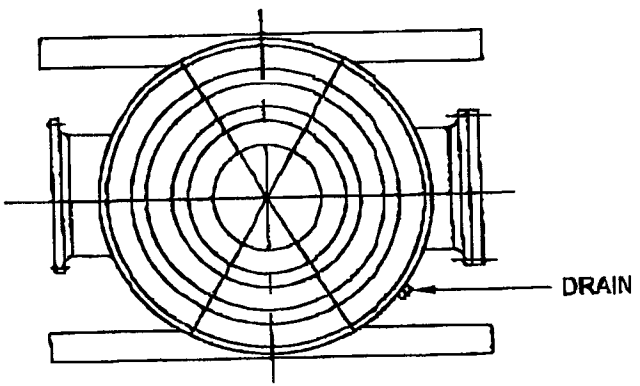
Reverse Osmosis System

	RO Feed		RO Permeate		RO Reject	
Stream Flow	1000 lb/hr		750 lb/hr		250.0 lb/hr	
Chemical Species	lb/hr	ppm	lb/hr	ppm	lb/hr	ppm
H^+	0.0000	0.000	0.0000	0.000	0.0000	0.000
Li^+	-	0.000	0.0000	0.000	0.0000	0.000
Be^{+2}	-	0.000	0.0000	0.000	0.0000	0.000
NH_4^+	-	0.000	0.0000	0.000	0.0000	0.000
Na^+	0.0725	72.530	0.0008	1.064	0.0717	286.929
Mg^{+2}	0.0245	24.479	0.0000	0.000	0.0245	97.916
Al^{+3}	-	0.000	0.0000	0.000	0.0000	0.000
K^+	0.0040	3.989	0.0002	0.266	0.0038	15.158
Ca^{+2}	0.0671	67.090	0.0005	0.626	0.0666	266.481
Cr^{+3}	-	0.000	0.0000	0.000	0.0000	0.000
Mn^{+2}	0.0000	0.005	0.0000	0.000	0.0000	0.019
Fe^{+2}	0.0000	0.045	0.0000	0.003	0.0000	0.171
Ni^{+2}	-	0.000	0.0000	0.000	0.0000	0.000
Cu^{+2}	0.0000	0.001	0.0000	0.000	0.0000	0.004
Zn^{+2}	-	0.000	0.0000	0.000	0.0000	0.000
Rb^+	-	0.000	0.0000	0.000	0.0000	0.000
Sr^{+2}	0.0010	0.961	0.0000	0.064	0.0009	3.652
Ag^+	-	0.000	0.0000	0.000	0.0000	0.000
Cd^{+2}	-	0.000	0.0000	0.000	0.0000	0.000
Sb^{+3}	-	0.000	0.0000	0.000	0.0000	0.000
Cs^+	-	0.000	0.0000	0.000	0.0000	0.000
Ba^{+2}	0.0001	0.085	0.0000	0.006	0.0001	0.323
Hg^{+2}	-	0.000	0.0000	0.000	0.0000	0.000
Pb^{+2}	-	0.000	0.0000	0.000	0.0000	0.000
HCO_3^-	0.0460	45.965	0.0010	1.287	0.0450	180.000
NO_3^-	0.0003	0.338	0.0000	0.030	0.0003	1.261
F^-	-	0.000	0.0000	0.000	0.0000	0.000
SO_4^{-2}	0.2836	283.587	0.0023	3.025	0.2813	1,125.274
Cl^-	0.0675	67.474	0.0010	1.349	0.0665	265.848
AsO_4^{-3}	-	0.000	0.0000	0.000	0.0000	0.000
SeO_4^{-2}	-	0.000	0.0000	0.000	0.0000	0.000
Br^-	-	0.000	0.0000	0.000	0.0000	0.000
I^-	-	0.000	0.0000	0.000	0.0000	0.000
SiO_2	0.0126	12.618	0.0004	0.572	0.0122	48.756
CO_2	0.0023	2.327	0.0017	2.287	0.0006	2.448
$B(OH)_3$	-	0.000	0.0000	0.000	0.0000	0.000
NH_3	-	0.000	0.0000	0.000	0.0000	0.000
CH_4	-	0.000	0.0000	0.000	0.0000	0.000
H_2S	-	0.000	0.0000	0.000	0.0000	0.000
Scale Inhibitor	0.0000	0.000	0.0000	0.000	0.0000	0.000
Benzene	-	0.000	0.0000	0.0000	0.0000	0.000
Toluene	-	0.000	0.0000	0.0000	0.0000	0.000
Xylenes	-	0.000	0.0000	0.0000	0.0000	0.000
Ethylbenzene	-	0.000	0.0000	0.0000	0.0000	0.000
Arsine	-	0.000	0.0000	0.0000	0.0000	0.000
Radon, Ci	-	0.000	0.0000	0.0000	0.0000	0.000
TDS	0.5815	581.494	0.0079	10.579	0.574	2,294.240

Attachment
CDR-231



FRONT ELEVATION



TOP VIEW

DIFFUSER ASSEMBLY IS DRILLED WIDE OPEN TO MINIMIZE PRESSURE DROP.

SILENCER IS DESIGNED TO PROVIDE FOR SOUND LEVELS NOT TO EXCEED 60 dBA @ 650 FEET

DESIGN CONDITIONS				
SERVICE	STEAM BLOWDOWN SILENCER	FLUID	STEAM
FLOW RATE	706000 lb/hr MAXIMUM	MOLECULAR WT.	18
VALVE INLET	P1: 314.7 psi(a)	TEMPERATURE	450°F
SILCR. INLET	P2: 17.2 psi(a)		
SILCR. OUTLET	P3: 14.7 psi(a)	PRESSURE DROP	2.5 psi

PROJECT INFORMATION
CUSTOMER: BIBB & ASSOC.
CUST. REF.: 1
TAG NO.: 1
P.O.#:

SILNCR. CONN.'S		UPSTR. PIPING
INLET	36"-150# RFWN	SAFETY VALVE SERVICE: ☐NO ☐YES
OUTLET	VENT TO ATMOSPHERE	IF YES, SPECIFY VALVE DISCHARGE SYSTEM:
DRAIN	3" NPT CPLG	☐ CLOSED → VERIFY PRESSURE DROP
		☐ OPEN (DRIP PAN) → SUBMIT PIPING DETAILS

MATERIAL SPEC.'S		
SHELL	THK: 1/4"	MAT'L: CARBON STEEL
HEAD	THK: 1/4"	MAT'L: CARBON STEEL
FACINGS	THK: 14 GA.	MAT'L: CARBON STEEL
INLET	THK: 0.250"	MAT'L: SA105 (FLANGE), SA106B/SA53B (DIFFUSER)
PACKING	THK: 6 LB/FT3	MAT'L: LONG STRAND GLASS FIBER

		EXT. FINISH	
SANDBLAST	SSPC-SP6		PRIME: CARBOZINC 11, 2-3 MILS DFT*
WEIGHT	13,290 lbs		FINISH: NONE
			*AVERAGE MIL READING

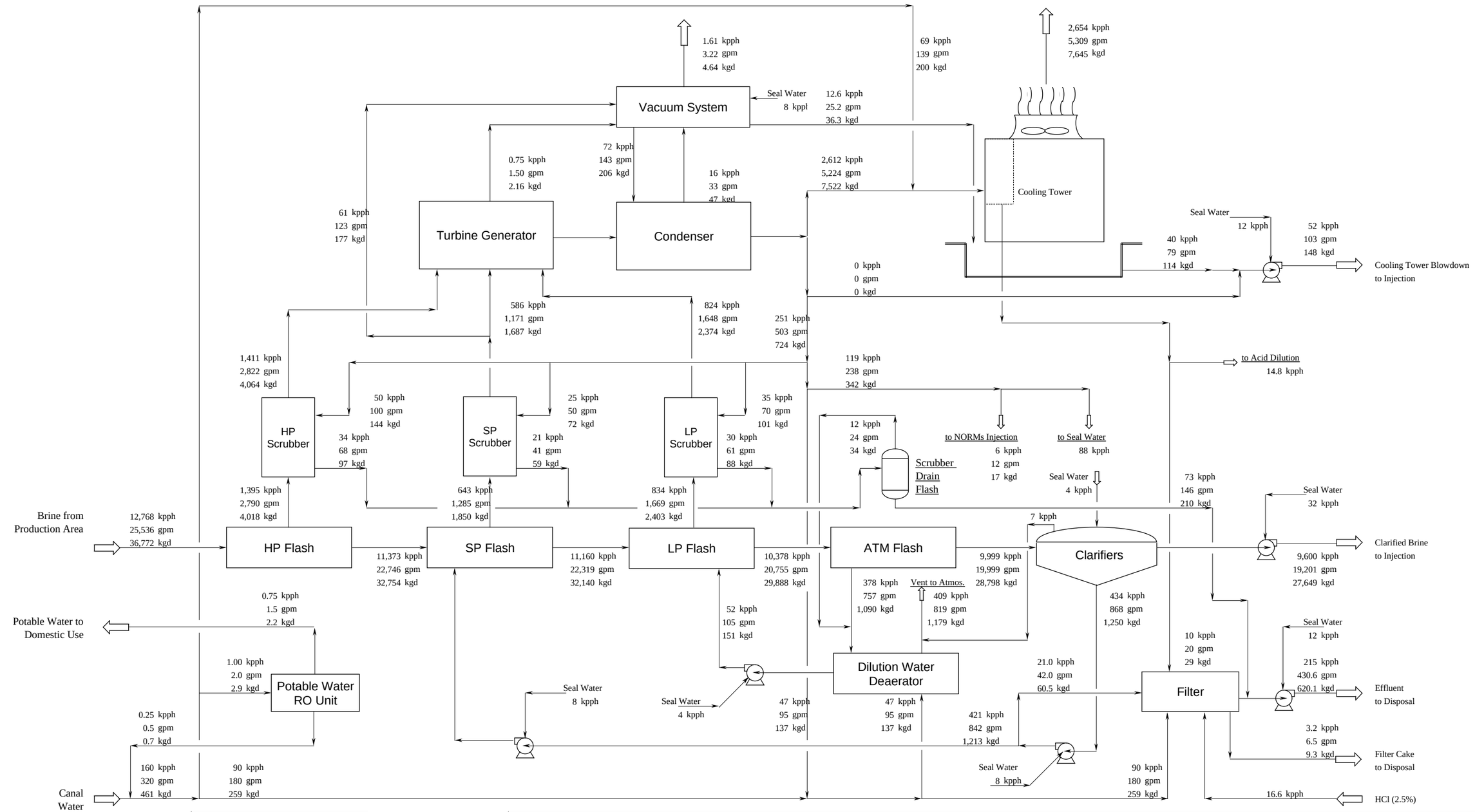
FLUID KINETICS

FLUID KINETICS CORPORATION
VENTURA, CALIFORNIA

MODEL BOS 94-94-2754

DR.	DATE	DRAWING NO.	REV.
CP	05/29/02	2270334B	-

Attachment
Fig. 3.3-9rl



Case 1 Conditions (Summer Design):

Brine Enthalpy, Btu/lb	404.8
Brine TDS, wt%	23.5
HP Flash, psig	300.0
SP Flash, psig	120.0
LP Flash, psig	20.0
Dry Bulb Temp., F	105.0
Wet Bulb Temp., F	80.0
Cooling Tower Cells	20
Net Output,MW	175.0

REV.	DESCRIPTION		
1	REVISED FILTER WATER SUPPLY	JRB	7-10-02
C	GENERAL REVISION	JRB	5-7-02
B	GENERAL REVISION	JRB	4-18-02
A	ISSUED FOR REVIEW	JRB	3-15-02

KIEWIT PKS SINCE 1884

CALENERGY OPERATING CORPORATION
A MIDAMERICAN ENERGY HOLDINGS COMPANY AFFILIATE

Unit 6 Development Project
Initial Engineering

Bibb and associates

Unit 6
Water Balance
Case 1

Figure 3.3-9 rev.1

SHEET
1 of 1
DRAWING NUMBER
22-024-WB-002 D